

30 June 2023

REVISION 7

TECHNICAL MANUAL

CERTIFICATION MANUAL

FOR MINIATURE/MICROMINIATURE ELECTRONICS

MODULE TEST AND REPAIR/FIBER OPTIC TEST AND

REPAIR (2M/MTR/FOTR) PROGRAM

ORGANIZATIONAL/INTERMEDIATE/DEPOT LEVEL



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 CERTIFICATION MANUAL FOR MINIATURE/MICROMINIATURE ELECTRONICS MODULE TEST AND REPAIR/FIBER OPTIC TEST AND REPAIR (2M/MTR/FOTR) PROGRAM

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N/A

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N/A

Continued on additional pages as needed.

CERTIFICATION STATEMENT

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Revision 6	30 September 2021
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Only those sections/pages assigned to the manual are listed in this index.

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Page B	Forward
001 00	Introduction
002 00	2M/MTR/FOTR Personnel Certification And Recertification
003 00	2M/MTR/FOTR Site Certification

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C Approval	Appendix G / G-1:4	Appendix Q / Q-1:6
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003 / 1:40	Appendix J / J-1:1	Appendix T / T-1:4
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Appendix L / L-1:12

Foreword

1. This manual provides certification procedures and reporting requirements for the following:
 - a. 2M/MTR/FOTR Personnel
 - b. 2M/MTR/FOTR Repair Sites
 - c. 2M/MTR/FOTR Training Sites
 - d. 2M/MTR/FOTR Inspector Sites
 - e. 2M/MTR/FOTR Fleet Coordinator Inspection Sites
2. All activities involved in the certification process shall be familiar with these requirements and quality control procedures.
3. This manual is designed to assist the following program users in the certification process:
 - a. Systems Commands
 - b. Fleet Commanders
 - c. Type Commanders
 - d. Maintenance and Logistics Commands
 - e. Expeditionary Forces
 - f. Regional Maintenance Centers
 - g. Depots
 - h. Training Sites
 - i. Commanding Officers
 - j. End Users
4. Use of this manual increases the accuracy and efficiency of the 2M/MTR/FOTR Program in two ways:
 - a. The end user can ensure the command is capable of providing quality 2M/MTR/FOTR diagnostic testing and repairs in accordance with applicable directives.
 - b. The use of this manual shall ensure that all activities performing 2M/MTR/FOTR testing and repair are utilizing uniform certification requirements and procedures.

Developed by:	2M and MTR Certification Agents Code 441, Building 169, Magazine Road NAVUNSEAWARCEN DET FEO NORFOLK St. Juliens Creek Annex Portsmouth VA 23702	FOTR Certification Agent Code A31, Bldg 1500 Rm 110A 17214 Avenue B, Suite 126 Dahlgren, VA 22448-5147
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CERTIFICATION MANUAL FOR THE 2M/MTR/FOTR Program

30 June 2023

Introduction

1-1 PURPOSE

1. This manual provides the certification criteria for all 2M/MTR/FOTR personnel and sites under the cognizance of the 2M/MTR/FOTR Program.
2. Technician certification identifies personnel who have demonstrated the ability to perform quality 2M/MTR/FOTR diagnostic testing and repair, and provides the means of implementing approved techniques and procedures.
3. Site certification verifies the availability and functional ability of required equipment to perform diagnostic testing and repair.
4. The 2M/MTR/FOTR certification process establishes standards and procedures to ensure the continued quality of 2M/MTR/FOTR diagnostic testing and repair performed by and in support of the fleet.

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1-3 RESPONSIBILITIES

1. Major program administration and management responsibilities are defined in:
 - a. COMUSFLTFORCOMINST 4790.3, Joint Fleet Maintenance Manual
 - b. OPNAVINST 4700.7, Maintenance Policy for United States Navy Ships
 - c. OPNAVINST 4790.13, Maintenance of Naval Electronic Equipment
 - d. COMNAVAIRFORINST 4790.2, Naval Aviation Maintenance Program
 - e. NAVSEAINST 4790.17, Miniature/Microminiature Module Test and Repair (2M/MTR) Program
 - f. COMDTINST 4790.2, Coast Guard Miniature/Microminiature (2M)/Module Test and Repair (MTR) Program

1-4 REFERENCE MATERIAL

1. Table 1-1 lists the reference material for the 2M/MTR/FOTR Program and this manual.
2. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence.

Table 1-1 Reference Material

Reference Document	Title
A-100-0008	Miniature, Microminiature and MTR Pipeline
A-100-0058	2M Technician Recertifier Course
A-100-0072	Miniature Electronics Repair Course
A-100-0073	Microminiature Electronics Repair Course
A-100-0074	2M Instructor Pipeline Course
A-100-0076	Module Test and Repair Equipment Operator Course
A-100-0135	2M Instructor Initial Skills Course
A-100-0136	2M Instructor Certification/Recertification Course
A-100-0144	2M Technician Recertifier Requalification Course
A-670-0063	Fiber Optic Maintenance Technician Course
COMDTINST 4790.2	Coast Guard Miniature/Microminiature (2M)/Module Test and Repair (MTR) Program
COMFLTFORCOMINST 4790.3	Joint Fleet Maintenance Manual
COMNAVAIRFORINST 4790.2	The Naval Aviation Maintenance Program

Reference Document	Title
MIL-STD-1678-1D	Fiber Optic Cabling Systems Requirements and Measurements, Part 1: Design, Installation and Maintenance Requirements
MIL-STD-2042 Parts 1-6	Fiber Optic Cable Topology Installation Standard Methods for Surface Ships and Submarines
NAVAIR 01-1A-23 NAVSEA SE004-AK-TRS-10/2M	Standard Maintenance Practices Miniature/Microminiature (2M) Electronics Assembly Repair
NAVAIR 17-600-193-6-1	PRC-2000-2M System Electronic Rework Power Unit Preoperational Checklist
NAVAIR 17-600-193-6-2	PACE Soldering Station Periodic Maintenance Requirement Manual
NAVAIR 17-600-193ESD-6-1	Electrostatic Discharge (ESD) Protection Devices Preoperational Checklist
NAVAIR 17-600-525-6-2	ProTrack I Model 20B/ProTrack Scanner I Periodic Maintenance Requirements Manual
NAVAIR 17-600-572-6-1	Miniature/Microminiature (2M) Microscope and Miniature/Microminiature (2M) Display Trainer Preoperational Checklist
NAVAIR 17-600-572-6-2	Miniature/Microminiature (2M) Microscope and Miniature/Microminiature (2M) Display Trainer Periodic Maintenance Requirements Manual
NAVSEA DWG 6872811	Toolkit, ST-Connector (MIL-C-83522), Fiber Optic, Navy Shipboard
NAVSEA DWG 6872813	Toolkit, HD Connector (MIL-C-28876), Fiber Optic, Navy Shipboard
NAVSEA DWG 7085185	Toolkit, Fiber Optic, Navy Submarine
NAVSEA DWG 8477552	Navy Shipboard Fiber Optic Training Certification Program
NAVSEA MIP 4911/003	Module Test and Repair (MTR) System Maintenance Index Page
NAVSEA MIP 6652/005	PACE Soldering Stations Maintenance Index Page
NAVSEA S9665-CY-OMP-010/PRC-2000/U	PRC-2000-2M System, Electronic Rework Power Unit Operation and Maintenance Manual
NAVSEA SE010-A7-MMC-010/MBT-250-SD/U	Station Electronic Rework Power Unit, MBT-250-SD, Operation and Maintenance, Organizational/Intermediate Level
NAVSEA ST900-HN-GPT-010	Department of Defense Module Test and Repair User's Manual AN/USM-674(V) and AN/USM-726(V)

Reference Document	Title
NAVSEAINST 4790.17	Miniature/Microminiature Module Test and Repair (2M/MTR) Program
NAVSUP Publication 485	Operational Forces Supply Procedures/Naval Supply Procedures Ashore
N96-NTSP-S-30-XXXX	Navy Training System Plan Fiber Optic Maintenance, Draft
OPNAVINST 4700.7	Maintenance Policy for United States Navy Ships
OPNAVINST 4790.4	Ships' Maintenance and Material Management System Policy
OPNAVINST 4790.13	Maintenance of Naval Electronic Equipment
NTP S-30-8711A	Navy Training Plan (NTP), Miniature/ Microminiature (2M) Electronics Repair Program
NAVEDTRA 135	Navy School Management Manual
S9086-PF-STM-010/CH-408	Fiber Optic Cable Topology Operation, Maintenance, and Repair manual
000A0393	2M/MTR Piece Parts - NAVOCEANPROFAC/NAVFAC Allowance Parts List
000A1712	2M/MTR Piece Parts - USCG NESU Allowance Parts List
000A1713	2M/MTR Piece Parts - USCG ESU Allowance Parts List
000A1714	2M/MTR Piece Parts-USCG WMEC Allowance Parts List
000A1787CL	AN/USM-674(V)3 Test Station, Electrical / Electronic Allowance Parts List
000A1788CL	AN/USM-674(V)4 Test Station, Electrical / Electronic Allowance Parts List
000A2963	2M/MTR Piece Parts-USCG WAGB-20 Allowance Parts List
000A8423	2M Electronic Repair System Allowance Parts List
000A8573	2M/MTR Augmented Piece Parts - CG SRI Allowance Parts List
000B2466	2M/MTR Piece Parts – LHA6 Class Allowance Parts List
000B4001	2M/MTR Piece Parts - SRI FORD Class CVN78 Allowance Parts List
000B8516	2M/MTR Piece Parts-USCG WMSL Class SRI Allowance Parts List
000B7319	2M/MTR Workbench Allowance Parts List
000B8038	Test Station, Electrical, USM-726(V)1

Reference Document	Title
000B8039	Test Station, Electrical, USM-726(V)2
000B8040	Model 32 Test Set, Semiconductor
000B8041	Controller(V)1, Data Entry, Automatic
000B8042	Controller(V)2, Portable, Data Entry, Auto
000C0114	Fiber Optic Test and Repair Workcenter Allowance Parts List
000C0993	General Fiber Optic Cable APL for tracking in MTRTS
00033099	2M/MTR Piece Parts – Submarine Training Centers Allowance Parts List
00033100	2M/MTR Piece Parts - Surface Training Centers Allowance Parts List
00033318	Fiber Optic Light Duty Toolkit (6872811) Parts List
00033320	Fiber Optic Heavy Duty Toolkit (6872813) Parts List
00035231	2M/MTR Piece Parts - MCM Allowance Parts List
00036544	2M/MTR Piece Parts – Expanded IMA/MTR Allowance Parts List
00036683	2M/MTR Augment Piece Parts - LCC, LPD, LSD, LST Allowance Parts List
00036684	2M/MTR Augment Piece Parts - DDG51 SRI Allowance Parts List
00036924	2M/MTR Piece Parts - AEGIS Training Center Allowance Parts List
00036925	2M/MTR Piece Parts – Assault Craft Unit, LCAC Allowance Parts List
00038031	Controller, 586/Pentium Processor Allowance Parts List
00038733	2M/MTR Piece Parts - SSBN/SSGN Allowance Parts List
00040153	2M/MTR Piece Parts - GEMD Allowance Parts List
00040154	2M Piece Parts – Technical Support Center Allowance Parts List
00040856	2M/MTR Piece Parts – LHA5, LHD, AS Allowance Parts List
00041450	2M Kit, Portable Allowance Parts List
0004199SA	57705 ProTrack I, 20B, Tracker Allowance Parts List
00041994	AN/USM-674/726 Accessory Kit Allowance Parts List

Reference Document	Title
00041997	57705 ProTrack Scanner I Allowance Parts List
00043400	Fiber Optic Submarine Combo Toolkit (7085185) Parts List
00045345	2M/MTR Piece Parts – NAVCOMTELSTA, NCTAMS Allowance Parts List
00045595	2M/MTR Piece Parts – FACS FAC Allowance Part List
00045616	2M/MTR Piece Parts – Regional Cal Lab Allowance Parts List
00046414	2M/MTR Piece Parts-SRI LPD 17 Allowance Parts List
3-HZ0002M01	HAZMAT, GP, 2M Repair Allowance Equipage List
670054591	Fiber Optic Tool Kits Allowance Equipage List
670054592	Multimode Measurement Quality Jumper Allowance Equipage List
670054594	Single Mode Measurement Quality Jumper Allowance Equipage List

1-5 CERTIFICATION LEVELS

- Table 1-2 identifies 2M/MTR certification levels, required training, and job classification codes.

Table 1-2 2M/MTR/FOTR Certification Levels

Certification Level	Training Required		USN NEC	USMC PMOS	USCG Comp Code
Miniature Electronics Repair Technician (MN)	A-100-0072	Miniature Electronics Repair	784A	6423	2MRPR
Microminiature Electronics Repair Technician (MC)	A-100-0073 *A-100-0072	Microminiature Electronics Repair Miniature Electronics Repair	783A 784A	6423	2MMRPR
MTR Technician (MTR)	A-100-0076	Module Test & Repair Equipment Operator			MTR
2M/MTR Technician (2M/MTR)	*A-100-0072 *A-100-0073 *A-100-0076 or A-100-0008	Miniature Electronics Repair Microminiature Electronics Repair MTR Equipment Operator 2M/MTR Technician Pipeline	784A 783A 730A		

Certification Level	Training Required		USN NEC	USMC PMOS	USCG Comp Code
2M/MTR/FOTR Technician (2M/MTR/FOTR)	*A-100-0072 *A-100-0073 *A-100-0076 *‡A-670-0063	Miniature Electronics Repair Microminiature Electronics Repair MTR Equipment Operator Fiber Optic Maintenance Technician	784A 783A		
FOTR Technician (FOTR)	A-670-0063 Or Equivalent‡	Fiber Optic Maintenance Technician			
2M/MTR Technician Recertifier (RC)	*A-100-0072 *A-100-0073 *A-100-0076 or A-100-0008 A-100-0058 A-100-0144	Miniature Electronics Repair Microminiature Electronics Repair MTR Equipment Operator MTR Equipment Operator 2M/MTR Technician Pipeline 2M/MTR Technician Recertifier 2M/MTR Technician Recertifier Requalification	784A 783A 730A 772B	6423	
2M/MTR/FOTR Inspector (INSP)	*A-100-0072 *A-100-0073 *A-100-0076 or A-100-0008 *A-100-0058 A-100-0144 *‡A-670-0063	2M/MTR Inspector JQR Miniature Electronics Repair Microminiature Electronics Repair MTR Equipment Operator 2M/MTR Technician Pipeline 2M/MTR Technician Recertifier 2M/MTR Technician Recertifier Requalification Fiber Optic Maintenance Technician Training per MIL-STD-1678-1D Requirement 1306	784A 783A 730A 772B		
NAVAIR 2M/MTR Inspector (AIR INSP)	*A-100-0072 *A-100-0073 *A-100-0076 or A-100-0008 *A-100-0058 A-100-0144	2M/MTR Inspector JQR Miniature Electronics Repair Microminiature Electronics Repair MTR Equipment Operator 2M/MTR Technician Pipeline 2M/MTR Technician Recertifier 2M/MTR Technician Recertifier Requalification	784A 783A 730A 772B		
FOTR Inspector (FOTR INSP)	*‡A-670-0063	FOTR Inspector JQR Maintainer Training per MIL-STD-1678-1D Requirement 1306			

Certification Level	Training Required		USN NEC	USMC PMOS	USCG Comp Code
2M Instructor (2M IN)	A-100-0074	2M Instructor Pipeline	773B	6423	2MINST
	*A-012-0077	Navy Instructor Training	805A		
	*A-100-0072	Miniature Electronics Repair	784A		
	*A-100-0073	Microminiature Electronics Repair	783A		
	or A-100-0008	2M/MTR Technician Pipeline	730A		
MTR Instructor (MTR IN)		MTR Instructor IQP			
	*A-012-0077	Navy Instructor Training	805A		
	*A-100-0076	MTR Equipment Operator			
FOTR Instructor (FOTR IN)		Maintainer Training per MIL-STD-1678-1D Requirement 1306			
	*A-012-0077	Navy Instructor Training	805A		
2M/MTR/FOTR Fleet Coordinator (FC)		Previous 2M/MTR/FOTR Inspector or 2M/FOTR Instructor 2M/MTR Inspector JQR FOTR Inspector JQR			
	*A-100-0072	Miniature Electronics Repair	784A		
	*A-100-0073	Microminiature Electronics Repair	783A		
	*A-100-0076	MTR Equipment Operator			
	or A-100-0008	2M/MTR Technician Pipeline	730A		
	*A-100-0058	2M/MTR Technician Recertifier	772B		
	A-100-0144	2M/MTR Technician Recertifier Requalification			
	*‡A-670-0063	Maintainer Training per MIL-STD-1678-1D Requirement 1306			
2M Certification Agent (CA)	Appointed:	2M/MTR/FOTR Program Manager Previous 2M/MTR Inspector or 2M Instructor			
	*A-100-0072	Miniature Electronics Repair	784A		
	*A-100-0073	Microminiature Electronics Repair	783A		
	*A-100-0076	MTR Equipment Operator			
	Or A-100-0008	2M/MTR Technician Pipeline	730A		
	A-100-0058	2M/MTR Technician Recertifier	772B		
	A-100-0074	2M Instructor Pipeline	773B		
MTR Certification Agent (CA)	Appointed:	2M/MTR/FOTR Program Manager			
	*A-100-0076	MTR Equipment Operator			
	A-100-0058	2M/MTR Technician Recertifier			
FOTR Certification Agent (CA)	Appointed:	2M/MTR/FOTR Program Manager			
		Maintainer Training per MIL-STD-1678-1D Requirement 1306			
	‡A-670-0063	Fiber Optics Maintenance Technician			

* Prerequisite

‡ Equivalent would be completion of the following modules from the Maintainer Training, and 16 hours of additional troubleshooting training, provided by an NSWCDahlgren certified fiber optic trainer:

- CORE

- Fiber Optic Termination – Single Ferrule (Light Duty)
- Fiber Optic Termination – Multi-terminus (Heavy Duty)
- Fiber Optic Termination – Fusion Splicing
- Optical Testing
- KITCO Fiber Optics Class 6000-2265 and kSARIA Class KSA-1208 meet this equivalency definition
- C-ARTS Block-1 Training CIN: PEOCVN-C78-FOT-999-MAINT-B1-1.1

1-6 PERSONNEL REPORTING

1. 2M Instructors, MTR Instructors, FOTR Instructors, 2M/MTR Technician Recertifiers, 2M/MTR Inspectors, FOTR Inspectors, 2M/MTR/FOTR Fleet Coordinators, 2M Certification Agents, MTR Certification Agents, and FOTR Certification Agents shall report completion of 2M/MTR/FOTR personnel initial certification and recertification in the 2M/MTR/FOTR database.
2. Report completion via the 2M/MTR/FOTR SharePoint database website located at <https://intelshare.intelink.gov/sites/2m-mtr-database/>. For user access, contact the 2M/MTR/FOTR SharePoint Administrator via e-mail at 2mmtr_help@us.navy.mil.
3. If 2M/MTR/FOTR SharePoint access is not available for an extended period, reporting shall be completed via e-mail to 2mmtr_help@us.navy.mil.
4. All initial certifications for US Coast Guard personnel must be reported in the USCG Direct Access and 2M/MTR/FOTR databases. Recertifications must be documented in the 2M/MTR/FOTR database.

30 June 2023

2M/MTR/FOTR Personnel Certification and Recertification

2-1 MINIATURE ELECTRONICS REPAIR TECHNICIAN

2-1.1 Functions and Capabilities

1. Technicians certified as Miniature Electronics Repair Technicians are authorized to repair electrical and electronics enclosures, assemblies, subassemblies, and modules as follows:
 - a. Wiring and soldering of terminals and connectors (wires AWG 26 and larger).
 - b. Removal and replacement of discrete components and integrated circuits on single-sided and double-sided through-hole technology circuit card assemblies (CCAs).
 - c. Removal and replacement of conformal coatings on single-sided and double-sided through-hole technology CCAs.
 - d. Damaged laminate, pad, conductor, and eyelet repair on single-sided and double-sided through-hole technology CCAs.
2. Completed repairs shall meet the applicable workmanship standards of NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M, Standard Maintenance Practices for 2M Electronics Assembly Repair.

2-1.2 Initial Certification Requirements

1. To be eligible for training at the Miniature Electronics Repair level, technicians must be either assigned or in transit to an activity requiring Miniature Electronics Repair Technicians.
2. To receive initial certification, the technician must complete the Miniature Electronics Repair Course, A-100-0072, by demonstrating proficiency in performing the following tasks:
 - a. Demonstrate safety and ESD procedures.
 - b. Clean, tin, form and install axial leaded components, radial leaded components, and dual in-line packages (DIPS) on single-sided and double-sided through-hole CCAs.
 - c. Remove components from single-sided and double-sided through-hole CCAs.
 - d. Identify the conformal coating and the conformal coating removal methods on conformally coated CCAs.
 - e. Remove conformal coating from components.
 - f. Remove components from conformally coated CCAs.

- g. Replace conformal coating on components.
- h. Excavate, straight wall, undercut and bevel a surface patch laminate repair.
- i. Perform a through-the-board patch laminate repair.
- j. Perform a cracked conductor repair.
- k. Perform an end-of-conductor repair.
- l. Strip, using mechanical wire strippers, and tin 20-gauge wires.
- m. Strip, using thermal wire strippers, and tin 22-gauge wires.
- n. Form and solder wrap splices.
- o. Perform single wire installations on pierced tab, hook and turret terminals.
- p. Perform two-wire installations on hook and turret terminals.
- q. Perform single-wire installations in solder cups using a soldering iron and resistive tweezers.
- r. Install crimp and solder style RF connectors on coaxial cables.
- s. Complete a comprehensive performance test consisting of the following:
 - 1. Procedural analysis.
 - 2. Conformal coating removal and replacement.
 - 3. Discrete component removal and replacement.
 - 4. Laminate repair.
 - 5. End-of-conductor repair.
 - 6. Remove and replace a DIP and a transistor from a conformally coated CCA(s) including procedural analysis and conformal coating application.
 - 7. Perform single wire installations on pierced tab and hook terminals.
 - 8. Perform two-wire installations on pierced tab and turret terminals.

2-1.3 Initial Certification Reporting Requirements

- 1. Upon completion of the Miniature Electronics Repair Course, A-100-0072:
 - a. The 2M Instructor shall issue a 2M/MTR/FOTR Certification Identification Card (Appendix A) to the certifying technician. 2M/MTR/FOTR Certification Identification Card forms are available for download on the 2M/MTR/FOTR SharePoint Database site.
 - b. The 2M Instructor shall enter the certification information into the 2M/MTR/FOTR database.

- c. Fleet Readiness Center, U.S. Coast Guard and U.S. Air Force training sites shall report certification of U.S. Navy and U.S. Marine Corps personnel in the 2M/MTR/FOTR database.
- d. U.S. Navy training sites shall report certification of U.S. Coast Guard personnel to the 2M/MTR/FOTR database.

2-1.4 Recertification Requirements

1. Miniature Electronics Repair Technicians must demonstrate proficiency by performing the tasks listed in the Miniature Electronics Repair Recertification Performance Test (Appendix C).
 - a. Miniature Electronics Repair Technicians shall recertify before their current certification expires.
 - b. Recertifying technicians may use the NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M Standard Maintenance Practices for 2M Electronics Assembly Repair manual to answer questions and perform procedures.
 - c. Miniature Electronics Repair training does not expire. Miniature Electronics Repair Technicians are eligible to recertify at any time after they have completed the A-100-0072 Miniature Electronics Repair course. However, Miniature Electronics Repair Technicians are not authorized conduct any repair listed in section 2-1.1 if their certification has expired.
2. NAVSEA Miniature Electronics Repair Technicians shall recertify with a 2M/MTR Inspector every 18 months.
 - a. A NAVSEA Miniature Electronics Repair Technician's certification is extendable to 24 months by the cognizant 2M/MTR/FOTR Fleet Coordinator to accommodate deployment or other appropriate scheduling conflicts.
 - b. NAVSEA Miniature Electronics Repair Technicians may recertify NAVAIR 2M/MTR Technician Recertifiers if authorized by the cognizant 2M/MTR/FOTR Fleet Coordinator.
3. NAVAIR Miniature Electronics Repair Technicians shall recertify with a 2M/MTR Technician Recertifier every 18 months.
 - a. A NAVAIR Miniature Electronics Repair Technician's certification is extendable to 24 months by the 2M Certification Agent to accommodate scheduling conflicts.
 - b. NAVAIR Miniature Electronics Repair Technicians may be recertified by a 2M/MTR Inspector to accommodate deployment or other appropriate scheduling conflicts.
4. A 2M Instructor may recertify a Miniature Electronics Repair Technician when a 2M/MTR Inspector or 2M/MTR Technician Recertifier is not locally available and recertification is authorized by the cognizant 2M/MTR/FOTR Fleet Coordinator for NAVSEA personnel or by the 2M Certification Agent for NAVAIR personnel.

2-1.5 Recertification Standards

1. A technician should satisfactorily complete all required recertification tasks within a three-day period.
2. All recertification projects shall meet minimum acceptance criteria in accordance with the NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M Standard Maintenance Practices for 2M Electronics Assembly Repair manual.

2-1.6 Recertification Reporting Requirements

1. Upon completion of the Miniature Electronics Repair Recertification Performance Test:
 - a. The Recertifier shall sign the performance test and issue it to the recertifying technician.
 - b. The Recertifier shall issue a 2M/MTR/FOTR Certification Identification Card (Appendix A) to the recertifying technician. 2M/MTR/FOTR Certification Identification Card forms are available for download on the 2M/MTR/FOTR SharePoint Database site.
 - c. The Recertifier shall enter the certification information into the 2M/MTR/FOTR database.

2-1.7 Remediation

1. If the technician cannot demonstrate the ability to complete the recertification tasks listed in the Miniature Electronics Repair Recertification Performance Test (Appendix C) within the three-day period, the Recertifier may decertify the technician, return the technician to their activity to practice, or provide remedial training and allow an additional two days to satisfactorily complete all required tasks.
 - a. Remedial training shall consist of a review of specifications, a review of techniques used, and demonstrations on areas previously identified as unsatisfactory.
2. If recertification is unsuccessful within a five-day period, the technician shall return to their activity to practice.
 - a. Thirty days after the unsuccessful recertification, the technician may schedule a follow-on recertification with the cognizant 2M/MTR Inspector or 2M/MTR Technician Recertifier. The thirty-day requirement is waivable for technicians within sixty days of deployment.
 - b. After three failed recertification attempts, the technician shall be decertified and the Recertifier shall follow the reporting procedures described in paragraph 2-1.8.

2-1.8 Recertification Failure

1. Technicians may be decertified during the recertification process. The Recertifier shall provide notification of inability to recertify to the technician's command.
 - a. For active duty NAVSEA Miniature Electronics Repair Technicians, the Recertifier shall notify the cognizant 2M/MTR/FOTR Fleet Coordinator of the recertification failure.
 1. The 2M/MTR/FOTR Fleet Coordinator shall forward a completed NAVPERS Form 1221/6 Navy Enlisted Classification (NEC) Change Request to the technician's Commanding Officer requesting their concurrence and signature to remove the technician's NEC.
 - b. For active duty NAVAIR Miniature Electronics Repair Technicians, the 2M/MTR Technician Recertifier shall forward a completed NAVPERS Form 1221/6 Navy Enlisted Classification (NEC) Change Request to their Commanding Officer requesting their concurrence and signature to remove the technician's NEC.

2-1.9 Substandard Performance Decertification

1. Technicians performing substandard 2M repairs are decertified by their command and are required to schedule recertification with the cognizant 2M/MTR Inspector or 2M/MTR Technician Recertifier.
 - a. The Recertifier shall provide remedial training in the areas identified as deficient.
 - b. If recertification is unsuccessful, the Recertifier shall follow the reporting procedures described in paragraph 2-1.8.

2-2 MICROMINIATURE ELECTRONICS REPAIR TECHNICIAN

2-2.1 Functions and Capabilities

1. Technicians certified as Microminiature Electronics Repair Technicians are authorized to repair electrical and electronics enclosures, assemblies, subassemblies, and modules as follows:
 - a. All miniature electronics repair techniques and processes (paragraph 2-1.1).
 - b. Wiring and soldering of terminals and connectors (wires AWG 28 and smaller).
 - c. Removal and replacement of discrete components and integrated circuits on multilayer circuit card assemblies (CCAs).
 - d. Damaged laminate and conductor repair on multilayer CCAs.
 - e. Installation and repair of jumper wiring.
 - f. Disassembly and repair of flexible printed circuitry assemblies.

- g. Repair of edge-lighted (plastic) panels.
 - h. Removal and replacement of components with welded leads.
 - i. Removal and replacement of surface mount devices.
 - j. Damaged laminate, land, and conductor repair on surface mount technology CCAs.
2. Completed repairs shall meet the applicable workmanship standards of NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M Standard Maintenance Practices for 2M Electronics Assembly Repair.

2-2.2 Initial Certification Requirements

- 1. To be eligible for training at the Microminiature Electronics Repair level, technicians must hold a current Miniature Electronics Repair Technician certification and be either assigned or in transit to an activity requiring Microminiature Electronics Repair Technicians.
- 2. To receive initial certification, the technician must complete the Microminiature Electronics Repair Course, A-100-0073, by demonstrating proficiency in performing the following tasks:
 - a. Demonstrate safety and ESD procedures.
 - b. Perform a flex print repair.
 - c. Install and remove chip components, metal electrode face (MELF) components, small outline transistors (SOTs), small outline integrated circuits (SOICs), flat packs, quad flat packs (QFPs), and plastic leaded chip carriers (PLCCs) on epoxy/glass surface mount technology CCAs.
 - d. Install and remove tantalum capacitors and other surface mount devices on ceramic surface mount technology CCAs.
 - e. Install and bond jumper wires.

2-2.3 Initial Certification Reporting Requirements

- 1. Upon completion of the Microminiature Electronics Repair Course, A-100-0073:
 - a. The 2M Instructor shall issue a 2M/MTR/FOTR Certification Identification Card (Appendix A) to the certifying technician. 2M/MTR/FOTR Certification Identification Card forms are available for download on the 2M/MTR/FOTR SharePoint Database site.
 - b. The 2M Instructor shall enter the certification information into the 2M/MTR/FOTR database.
 - c. Fleet Readiness Center, U.S. Coast Guard and U.S. Air Force training sites shall report certification of U.S. Navy and U.S. Marine Corps personnel to the 2M/MTR/FOTR database.
 - d. U.S. Navy training sites shall report certification of U.S. Coast Guard personnel to the 2M/MTR/FOTR database.

2-2.4 Recertification Requirements

1. Microminiature Electronics Repair Technicians must demonstrate proficiency by performing the tasks listed in the Microminiature Electronics Repair Recertification Performance Test (Appendix D).
 - a. Microminiature Electronics Repair Technicians shall recertify before their current certification expires.
 - b. Recertifying technicians may use the NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M Standard Maintenance Practices for 2M Electronics Assembly Repair manual to answer questions and perform procedures.
 - c. Microminiature Electronics Repair training does not expire. Microminiature Electronics Repair Technicians are eligible to recertify at any time after they have completed the A-100-0073 Microminiature Electronics Repair course. However, Microminiature Electronics Repair Technicians are not authorized to conduct any repairs listed in section 2-2.1 if their certification has expired.
2. NAVSEA Microminiature Electronics Repair Technicians shall recertify with a 2M/MTR Inspector every 18 months.
 - a. A NAVSEA Microminiature Electronics Repair Technician's certification is extendable to 24 months by the cognizant 2M/MTR/FOTR Fleet Coordinator to accommodate deployment or other scheduling conflicts.
 - b. NAVSEA Microminiature Electronics Repair Technicians may be recertified by a NAVAIR 2M/MTR Technician Recertifier if authorized by the cognizant 2M/MTR/FOTR Fleet Coordinator.
3. NAVAIR Microminiature Electronics Repair Technicians shall recertify with a 2M/MTR Technician Recertifier every 18 months.
 - a. A NAVAIR Microminiature Electronics Repair Technician's certification is extendable to 24 months by the 2M Certification Agent to accommodate scheduling conflicts.
 - b. NAVAIR Microminiature Electronics Repair Technicians may be recertified by a 2M/MTR Inspector to accommodate deployment or other appropriate scheduling conflicts.
4. A 2M Instructor may recertify a Microminiature Electronics Repair Technician when a 2M/MTR Inspector or 2M/MTR Technician Recertifier is not locally available and recertification is authorized by the cognizant 2M/MTR/FOTR Fleet Coordinator for NAVSEA personnel or by the 2M Certification Agent for NAVAIR personnel.

2-2.5 Recertification Standards

1. A technician should satisfactorily complete all required recertification tasks within a three-day period.
2. All recertification projects shall meet minimum acceptance criteria in accordance with the NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M Standard Maintenance Practices for 2M Electronics Assembly Repair manual.

2-2.6 Recertification Reporting Requirements

1. Upon completion of the Microminiature Electronics Repair Recertification Performance Test:
 - a. The Recertifier shall sign the performance test and issue it to the recertifying technician.
 - b. The Recertifier shall issue a 2M/MTR/FOTR Certification Identification Card (Appendix A) to the recertifying technician. 2M/MTR/FOTR Certification Identification Card forms are available for download on the 2M/MTR/FOTR SharePoint Database site.
 - c. The Recertifier shall enter the certification information into the 2M/MTR/FOTR database.

2-2.7 Remediation

1. If the technician cannot demonstrate the ability to complete the recertification tasks listed in the Microminiature Electronics Repair Recertification Performance Test (Appendix D) within the three-day period, the Recertifier may decertify the technician, return the technician to their activity to practice, or provide remedial training and allow an additional two days to satisfactorily complete all required tasks.
 - a. Remedial training shall consist of a review of specifications, a review of techniques used, and demonstrations on areas previously identified as unsatisfactory.
2. If recertification is unsuccessful within a five-day period, the technician shall return to their activity to practice.
 - a. Thirty days after the unsuccessful recertification, the technician may schedule a follow-on recertification with the cognizant 2M/MTR Inspector or 2M/MTR Technician Recertifier. The thirty-day requirement is waivable for technicians within sixty days of deployment.
 - b. After three failed recertification attempts, the technician shall be decertified and the Recertifier shall follow the reporting procedures described in paragraph 2-2.8.

2-2.8 Recertification Failure

1. Technicians may be decertified during the recertification process. The Recertifier shall provide notification of inability to recertify at the Microminiature Electronics Repair level to the technician's command.

- a. For active duty NAVSEA Microminiature Electronics Repair technicians, the Recertifier shall notify the cognizant 2M/MTR/FOTR Fleet Coordinator of the recertification failure.
 1. The 2M/MTR/FOTR Fleet Coordinator shall forward a completed NAVPERS Form 1221/6 Navy Enlisted Classification (NEC) Change Request to the technician's Commanding Officer requesting their concurrence and signature to remove the technician's NEC.
- b. For active duty NAVAIR Microminiature Electronics Repair Technicians, the 2M/MTR Technician Recertifier shall forward a completed NAVPERS Form 1221/6 Navy Enlisted Classification (NEC) Change Request to their Commanding Officer requesting their concurrence and signature to remove the technician's NEC.

2-2.9 Substandard Performance Decertification

1. Technicians identified as performing substandard 2M repairs are decertified by their command and required to schedule recertification with the cognizant 2M/MTR Inspector or 2M/MTR Technician Recertifier.
 - a. The Recertifier shall provide remedial training in the areas identified as deficient.
 - b. If recertification is unsuccessful, the Recertifier shall follow the reporting procedures described in paragraph 2-2.8.

2-3 MTR TECHNICIAN

2-3.1 Functions and Capabilities

1. Technicians certified as MTR Technicians are authorized to test circuit card assemblies (CCAs) and electronic modules (EMs) using the MTR test station.

2-3.2 Initial Certification Requirements

1. To be eligible for MTR training, technicians must be either assigned or in transit to an activity requiring MTR Technicians.
2. To receive initial certification, the technician must complete the Module Test and Repair Equipment Operator Course, A-100-0076, by demonstrating proficiency in performing the following tasks:
 - a. Demonstrate safety and ESD procedures.
 - b. Verify that current software is loaded on the MTR controller.
 - c. Configure the hardware settings in the MTR test station.
 - d. Load databases into the MTR dispatcher.

- e. Download a test routine using the MTR dispatcher.
- f. Troubleshoot a faulted CCA and identify the faulty component.
- g. Complete MTRTS maintenance action documentation on a faulted CCA.
- h. Complete MTRTS maintenance actions with Instructor provided scenarios.
- i. Provide an MTRTS backup file for submission.

2-3.3 Initial Certification Reporting Requirements

1. Upon completion of Module Test and Repair Equipment Operator Course, A-100-0076:
 - a. The MTR Instructor shall issue a 2M/MTR/FOTR Certification Identification Card (Appendix A) to the certifying technician. 2M/MTR/FOTR Certification Identification Card forms are available for download on the 2M/MTR/FOTR SharePoint Database site.
 - b. The MTR Instructor shall enter the certification information into the 2M/MTR/FOTR database.
 1. The certifying technician's Miniature Electronics Repair or Microminiature Electronics Repair certification expiration date remains unchanged. The MTR certification expiration will be coincident to the Miniature Electronics Repair or Microminiature Electronics Repair expiration date, if applicable.
 - c. Fleet Readiness Center, U.S. Coast Guard and U.S. Air Force training sites shall report certification of U.S. Navy and U.S. Marine Corps personnel in the 2M/MTR/FOTR database.
 - d. U.S. Navy training sites shall report certification of U.S. Coast Guard personnel in the 2M/MTR/FOTR database.

2-3.4 Recertification Requirements

1. MTR Technicians must demonstrate proficiency by performing the tasks listed in the MTR Recertification Performance Test (Appendix E).
 - a. NAVSEA MTR technicians are required to bring a copy of their command's latest MTRTS report to their recertification.
 - b. MTR Technicians shall recertify before their current certification expires.
 - c. MTR training does not expire. MTR Technicians are eligible to recertify at any time after they have completed the A-100-0076 Module Test and Repair Equipment Operator course. However, MTR Technicians are not authorized to test CCAs and EMs using the MTR test station if their certification has expired.

2. NAVSEA MTR Technicians shall recertify with a 2M/MTR Inspector every 18 months.
 - a. A NAVSEA MTR Technician's certification is extendable to 24 months by the cognizant 2M/MTR/FOTR Fleet Coordinator to accommodate deployment or other appropriate scheduling conflicts.
 - b. NAVSEA MTR Technicians may be recertified by a NAVAIR 2M/MTR Technician Recertifier if authorized by the cognizant 2M/MTR/FOTR Fleet Coordinator.
3. NAVAIR MTR Technicians shall recertify with a 2M/MTR Technician Recertifier every 18 months.
 - a. A NAVAIR MTR Technician's certification is extendable to 24 months by the MTR Certification Agent to accommodate scheduling conflicts.
 - b. NAVAIR MTR Technicians may be recertified by a 2M/MTR Inspector to accommodate deployment or other appropriate scheduling conflicts.
4. An MTR Instructor may recertify an MTR Technician when a 2M/MTR Inspector or 2M/MTR Technician Recertifier is not locally available and recertification is authorized by the cognizant 2M/MTR/FOTR Fleet Coordinator for NAVSEA personnel or by the MTR Certification Agent for NAVAIR personnel.

2-3.5 Recertification Standards

1. A technician should satisfactorily complete all required tasks within a one-day period.

2-3.6 Recertification Reporting Requirements

1. Upon completion of the MTR Recertification Performance Test:
 - a. The Recertifier shall sign the performance test and issue it to the recertifying technician.
 - b. The Recertifier shall issue a 2M/MTR/FOTR Certification Identification Card (Appendix A) to the recertifying technician. 2M/MTR/FOTR Certification Identification Card forms are available for download on the 2M/MTR/FOTR SharePoint Database site.
 - c. The Recertifier shall enter the certification information into the 2M/MTR/FOTR database.

2-3.7 Remediation

1. If the technician cannot demonstrate the ability to complete the recertification tasks listed in the MTR Recertification Performance Test (Appendix E) within the one-day period, the Recertifier may decertify the technician, return the technician to their activity to practice, or provide remedial training and allow an additional day to satisfactorily complete all required tasks.
 - a. Remedial training shall consist of a review of specifications, a review of techniques used, and demonstrations on areas previously identified as unsatisfactory.

2. If recertification is unsuccessful within a two-day period, the technician shall return to their activity to practice.
 - a. Thirty days after the unsuccessful recertification, the technician may schedule a follow-on recertification with the cognizant 2M/MTR Inspector or 2M/MTR Technician Recertifier. The thirty-day requirement is waivable for technicians within sixty days of deployment.
 - b. After three failed recertification attempts, the technician shall be decertified and the Recertifier shall follow the reporting procedures described in paragraph 2-3.8.

2-3.8 Recertification Failure

1. Technicians may be decertified during the recertification process. The Recertifier shall provide notification of inability to recertify to the technician's command.

2-3.9 Substandard Performance Decertification

1. Technicians identified as being unable to test CCAs and EMs using the MTR test station are decertified by their command and required to schedule recertification with the cognizant 2M/MTR Inspector or 2M/MTR Technician Recertifier.
 - a. The Recertifier shall provide remedial training in the areas identified as deficient.
 - b. If recertification is unsuccessful, the Recertifier shall follow the reporting procedures described in paragraph 2-3.8.

2-4 2M/MTR TECHNICIAN

2-4.1 Functions and Capabilities

1. Technicians certified as 2M/MTR Technicians are authorized to perform the tasks required of a Microminiature Electronics Repair Technician (paragraph 2-2.1) and an MTR Technician (paragraph 2-3.1).

2-4.2 Initial Certification Requirements

1. To be eligible for designation as a 2M/MTR Technician, technicians must be either assigned or in transit to an activity requiring 2M/MTR Technicians.

2-4.3 Initial Certification Reporting Requirements

1. Upon completion of the Miniature Electronics Repair Course, A-100-0072, the Microminiature Electronics Repair Course, A-100-0073, and the Module Test and Repair Equipment Operator Course, A-100-0076, or the 2M/MTR Technician Pipeline Course, A-100-0008:

- a. Navy 2M/MTR Technicians are awarded NEC 730A with the submission of Form NAVPERS 1221/6 Navy Enlisted Classification Change Request.
- b. The instructor shall issue a 2M/MTR/FOTR Certification Identification Card (Appendix A) to the certifying technician. 2M/MTR/FOTR Certification Identification Card forms are available for download on the 2M/MTR/FOTR SharePoint Database site.
- c. The instructor shall enter the certification information in the 2M/MTR/FOTR database.

2-4.4 Recertification Requirements

1. 2M/MTR Technicians must demonstrate proficiency by performing the tasks listed in the Microminiature Electronics Repair Recertification Performance Test (Appendix D) and the MTR Recertification Performance Test (Appendix E).
 - a. NAVSEA 2M/MTR technicians are required to bring a copy of their command's latest MTRTS report to their recertification.
 - b. 2M/MTR Technicians shall recertify before their current certifications expire.
2. NAVSEA 2M/MTR Technicians shall recertify with a 2M/MTR Inspector every 18 months at the Microminiature Electronics Repair and MTR levels.
 - a. A NAVSEA 2M/MTR Technician's certification is extendable to 24 months by the cognizant 2M/MTR/FOTR Fleet Coordinator to accommodate deployment or other scheduling conflicts.
 - b. NAVSEA 2M/MTR Technicians may be recertified by a NAVAIR 2M/MTR Technician Recertifier if authorized by the cognizant 2M/MTR/FOTR Fleet Coordinator.
3. NAVAIR 2M/MTR Technicians shall recertify with a 2M/MTR Technician Recertifier every 18 months at the Microminiature Electronics Repair and MTR levels.
 - a. A NAVAIR 2M/MTR Technician's certification is extendable to 24 months by the 2M Certification Agent to accommodate scheduling conflicts.
 - b. NAVAIR 2M/MTR Technicians may be recertified by a 2M/MTR Inspector to accommodate deployment or other appropriate scheduling conflicts.
4. An Instructor who holds both a 2M Instructor and MTR Instructor certification may recertify a 2M/MTR Technician when a 2M/MTR Inspector or 2M/MTR Technician Recertifier is not locally available and recertification is authorized by the cognizant 2M/MTR/FOTR Fleet Coordinator for NAVSEA technicians or by the 2M Certification Agent for NAVAIR technicians.

2-4.5 Recertification Standards

1. Microminiature Electronics Repair recertification shall be in accordance with the Microminiature Electronics Repair Recertification Standards, paragraph 2-2.5.

2. MTR recertification shall be in accordance with the MTR Recertification Standards, paragraph 2-3.5.

2-4.6 Recertification Reporting Requirements

1. Upon completion of the Microminiature Electronics Repair and MTR Recertification Performance Tests:
 - a. The Recertifier shall sign the performance tests and issue them to the recertifying technician.
 - b. The Recertifier shall issue a 2M/MTR/FOTR Certification Identification Card (Appendix A) to the recertifying technician. 2M/MTR/FOTR Certification Identification Card forms are available for download on the 2M/MTR/FOTR SharePoint Database site.
 - c. The Recertifier shall enter the certification information into the 2M/MTR/FOTR database.

2-4.7 Remediation

1. If the technician cannot demonstrate the ability to complete the recertification tasks listed in Appendices D and E of this manual, the remediation procedures outlined in paragraphs 2-2.7 and/or 2-3.7 apply.

2-4.8 Recertification Failure

1. Technicians may be decertified during the recertification process.
 - a. The Recertifier shall follow the notification procedures outlined in paragraphs 2-2.8 and/or 2-3.8.
 - b. Follow-on recertification shall be scheduled with the cognizant 2M/MTR Inspector or 2M/MTR Technician Recertifier.

2-4.9 Substandard Performance Decertification

1. Technicians identified as performing substandard 2M repairs and/or identified as being unable to test circuit card assemblies or electronic modules using the MTR test station are decertified by their command and required to schedule recertification with the cognizant 2M/MTR Inspector or 2M/MTR Technician Recertifier.
 - a. The Recertifier shall provide remedial training in the areas identified as deficient.
 - b. If recertification is unsuccessful, the Recertifier shall follow the reporting procedures described in paragraph 2-2.8 and/or paragraph 2-3.8.

2-5 FIBER OPTIC TEST AND REPAIR (FOTR) TECHNICIAN

2-5.1 Functions and Capabilities

1. Technicians certified as Fiber Optic Test and Repair Technicians are authorized to repair fiber optic casualties specified at the organizational level (O-level) in accordance with the Fiber Optic Maintenance Plan. For example, these repairs include but are not limited to:
 - a. Damaged fiber optic cable jacket restoration
 - b. Light Duty MIL and COTS ST, SC, and LC style connectors
 - c. M29504 Termini and Heavy Duty M28876 connectors
 - d. Fusion spliced connections (only on applicable platforms)
2. Completed repairs shall meet the applicable workmanship standards of S9086-PF-STM-010/CH-408, Fiber Optic Cable Topology Operation, Maintenance, and Repair and MIL-STD-2042 and documented in the MTRTS Program.

2-5.2 Initial Certification Requirements

1. To be eligible for FOTR certification, technicians must be either assigned or in transit to an activity requiring O-Level FOTR Technicians. Technicians must meet the specified Ratings and Occupational Standards in accordance with N96-NTSP-S-30-XXXX and be E-6 or below.
2. To receive initial certification, the technician must complete either a or b below:
 - a. The Fiber Optic Maintenance Technician Course, A-670-0063, KITCO Fiber Optics Course 600-2265, kSARIA Course KAS-1208 or C-ARTS Block 1 (consult the FOTR ISEA for updates in approved courses since publication of this revision), by demonstrating proficiency in performing the following tasks:
 1. ST connector building and polishing
 2. SC connector building and polishing
 3. LC connector building and polishing
 4. M29504/14 or /15 termini building and polishing
 5. Fusion Splicing
 6. Optical Fault Isolation
 - b. The following modules of Maintainer Training and an additional 16 hours of troubleshooting provided by a trainer on NSWC Dahlgren's Certified Fiber Optic Trainers List (CFOTL):
 1. CORE
 2. Fiber Optic Termination – Single Ferrule (Light Duty)

3. Fiber Optic Termination – Multi-terminus (Heavy Duty)
4. Fiber Optic Termination – Fusion Splicing
5. Optical Testing

2-5.3 Initial Certification Reporting Requirements

1. Upon completion of the Fiber Optic Maintenance Technician Course, A-670-0063, the Instructor shall enter the certification information into the 2M/MTR/FOTR database.
2. The Instructor shall issue a 2M/MTR/FOTR Certification Identification Card (Appendix A) to the certifying technician. 2M/MTR/FOTR Certification Identification Card forms are available for download on the 2M/MTR/FOTR SharePoint Database site.
3. Technicians completing a course provided by a CFOTL organization shall report completion of the class to the FOTR Certification Agent or 2M/MTR/FOTR Fleet Coordinator who will facilitate entering the certification information into the 2M/MTR/FOTR database.
 - a. The FOTR Certification Agent or 2M/MTR/FOTR Fleet Coordinator shall issue a 2M/MTR/FOTR Certification Identification Card (Appendix A) to the certifying technician completing the equivalent CFOTL course. 2M/MTR/FOTR Certification Identification Card forms are available for download on the 2M/MTR/FOTR SharePoint Database site.

2-5.4 Recertification Requirements

1. FOTR Technicians must demonstrate proficiency by performing the tasks listed in the FOTR Technician Performance Test (Appendix B).
 - a. FOTR Technicians shall recertify before their current certification expires.
 - b. Recertifying technicians may use the S9086-PF-STM-010/CH-408, Fiber Optic Cable Topology Operation, Maintenance, and Repair manual to answer questions and perform procedures.
 - c. Fiber Optic Repair training does not expire. FOTR Technicians are eligible to recertify at any time after they have completed the A-670-0063 Fiber Optic Maintenance Technician Course or equivalent. However, FOTR Technicians are not authorized to conduct any fiber optic repair if their certification has expired.
2. A FOTR Inspector shall recertify NAVSEA FOTR Technicians every 18 months.
 - a. A NAVSEA FOTR Technician's certification is extendable to 24 months by the cognizant 2M/MTR/FOTR Fleet Coordinator to accommodate deployment or other appropriate scheduling conflicts.

2-5.5 Recertification Standards

1. A technician should satisfactorily complete all required recertification tasks within a two-day period.
2. All recertification projects shall meet minimum acceptance criteria in accordance with the S9086-PF-STM-010/CH-408, Fiber Optic Cable Topology Operation, Maintenance, and Repair manual and the criteria of MIL-STD-2042-6.

2-5.6 Recertification Reporting Requirements

1. Upon completion of the FOTR Recertification Performance Test:
 - a. The Recertifier shall sign the performance test and issue it to the recertifying technician.
 - b. The Recertifier shall issue a 2M/MTR/FOTR Certification Identification Card (Appendix A) to the recertifying technician. 2M/MTR/FOTR Certification Identification Card forms are available for download on the 2M/MTR/FOTR SharePoint Database site.
 - c. The Recertifier shall enter the certification information into the 2M/MTR/FOTR SharePoint database.

2-5.7 Remediation

1. If the technician cannot demonstrate the ability to complete the recertification tasks listed in the FOTR Technician Recertification Performance Test (Appendix B) within the two-day period, the Recertifier may decertify the technician, return the technician to their activity to practice, or provide remedial training and allow an additional two days to satisfactorily complete all required tasks.
 - a. Remedial training shall consist of a review of specifications, a review of techniques used, and demonstrations on areas previously identified as unsatisfactory.
2. If recertification is unsuccessful within a four-day period, the technician shall return to their activity to practice.
 - a. Thirty days after the unsuccessful recertification, the technician may schedule a follow-on recertification with the cognizant FOTR Inspector. The thirty-day requirement is waivable for technicians within sixty days of deployment.
 - b. After three failed recertification attempts, the technician shall be decertified and the Recertifier shall follow the reporting procedures described in paragraph 2-5.8.

2-5.8 Recertification Failure

1. Technicians may be decertified during the recertification process. The Recertifier shall provide notification of inability to recertify to the technician's command.

- a. For active duty NAVSEA FOTR Technicians, the Recertifier shall notify the cognizant 2M/MTR/FOTR Fleet Coordinator of the recertification failure.

2-5.9 Substandard Performance Decertification

1. Technicians performing substandard Fiber Optic repairs are decertified by their command and are required to schedule recertification with the cognizant FOTR Inspector.
 - a. The Recertifier shall provide remedial training in the areas identified as deficient.
 - b. If recertification is unsuccessful, the Recertifier shall follow the reporting procedures described in paragraph 2-5.8.

2-6 2M/MTR TECHNICIAN RECERTIFIER

2-6.1 Functions and Capabilities

1. 2M/MTR Technician Recertifiers are capable of performing all tasks required of Microminiature Electronics Repair Technicians (paragraph 2-2.1) and MTR Technicians (paragraph 2-3.1).
2. Technicians certified as 2M/MTR Technician Recertifiers are authorized to:
 - a. Perform recertification of NAVAIR 2M and MTR Technicians assigned to NAVAIR 2M/MTR repair sites.
 1. NAVAIR 2M/MTR repair sites are listed in the 2M/MTR Certification Activity Codes List (Appendix S), under the NAVAIR FRCs/AIMDs and Marine Corps Aviation headings.
 - b. Perform recertification of submarine repair 2M and MTR technicians onboard Submarine Tenders (AS-39 and AS-40) and at Trident Repair Facilities.
 - c. Evaluate, advise, and assist local 2M and MTR technicians.
 - d. Introduce and demonstrate new technologies to recertifying 2M/MTR technicians.

2-6.2 Initial Certification Requirements

1. To be eligible for training at the 2M/MTR Technician Recertifier level, technicians must hold current Microminiature Electronics Repair and MTR certifications and be either assigned or in transit to an activity specifically designated as a site requiring 2M/MTR Technician Recertifiers.
2. Military technicians must be E-5 through E-8.
3. To receive initial certification, the technician must complete the 2M/MTR Technician Recertifier Course, A-100-0058, by demonstrating proficiency in performing the following tasks:
 - a. Demonstrate safety and ESD procedures.

- b. Properly evaluate instructor provided 2M repair projects.
- c. Demonstrate familiarity of Repair Site review process, local policy, instructions, and facility requirements.
- d. Demonstrate the ability to evaluate proficiency of 2M/MTR technicians through application of the Miniature Electronics Repair Recertification Performance Test (Appendix C), the Microminiature Electronics Repair Recertification Performance Test (Appendix D), and the MTR Recertification Performance Test (Appendix E).
- e. Demonstrate the ability to perform Programs administrative tasks: up line reporting, knowledge of content and use of 2M MTR Share-point databases, MTR Test Routine DVD ROM media, MTR Software, and other 2M MTR Program resources.

2-6.3 Initial Certification Reporting Requirements

- 1. Upon completion of 2M/MTR Technician Recertifier Course, A-100-0058:
 - a. The certifying instructor shall issue a 2M/MTR/FOTR Certification Identification Card (Appendix A) to the certifying technician. 2M/MTR/FOTR Certification Identification Card forms are available for download on the 2M/MTR/FOTR SharePoint Database site.
 - b. The certifying instructor shall enter the certification information into the 2M/MTR/FOTR database.
 - c. Fleet Readiness Center, U.S. Coast Guard and U.S. Air Force training sites shall report certification of U.S. Navy and U.S. Marine Corps personnel to the 2M database.
 - d. U.S. Navy training sites shall report certification of U.S. Coast Guard personnel to the 2M database.

2-6.4 Recertification Requirements

- 1. 2M/MTR Technician Recertifiers are recertified every 18 months by completion of the 2M/MTR Technician Recertifier Requalification Course, A-100-0144.
 - a. A 2M/MTR Technician Recertifier's certification is extendable to 24 months by the 2M Certification Agent to accommodate scheduling conflicts.

2-6.5 Recertification Standards

- 1. The 2M/MTR Technician Recertifier Requalification Course, A-100-0144, shall be completed successfully.
 - a. Complete Microminiature Electronics Repair Recertification Performance Test in accordance with Appendix D.
 - b. Complete an MTR Recertification Performance Test in accordance with Appendix E.

2-6.6 Recertification Reporting Requirements

1. Upon completion of 2M/MTR Technician Recertifier Requalification Course, A-100-0144:
 - a. The certifying instructor shall issue a 2M/MTR/FOTR Certification Identification Card (Appendix A) to the recertifying 2M/MTR Technician Recertifier. 2M/MTR/FOTR Certification Identification Card forms are available for download on the 2M/MTR/FOTR SharePoint Database site.
 - b. The certifying instructor shall enter the certification information into the 2M/MTR/FOTR database.

2-6.7 Recertification Failure

1. 2M/MTR Technician Recertifiers may be decertified during the recertification process.
 - a. The certifying instructor shall provide notification of inability to recertify to the 2M/MTR Technician Recertifier's command.
 1. For active duty NAVSEA 2M/MTR Technician Recertifiers, the certifying instructor shall notify the cognizant 2M/MTR/FOTR Fleet Coordinator of the recertification failure.
 - a) The 2M/MTR/FOTR Fleet Coordinator shall forward a completed NAVPERS Form 1221/6 Navy Enlisted Classification (NEC) Change Request to the 2M/MTR Technician Recertifier's Commanding Officer requesting their concurrence and signature to remove the 2M/MTR Technician Recertifier's NEC.
 2. For active duty NAVAIR 2M/MTR Technician Recertifiers, the local 2M/MTR Program Manager shall forward a completed NAVPERS Form 1221/6 Navy Enlisted Classification (NEC) Change Request to their Commanding Officer requesting their concurrence and signature to remove the 2M/MTR Technician Recertifier's NEC.

2-6.8 Substandard Performance Decertification

1. 2M/MTR Technician Recertifiers identified as providing substandard technician recertification are decertified by their command and are required to attend the 2M/MTR Technician Recertifier Requalification Course, A-100-0144.
 - a. The A-100-0144 Instructor shall provide remedial training in the areas identified as deficient. If the Technician Recertifier is unable to complete the A-100-0144 course, the Instructor shall follow the reporting procedures described in paragraph 2-6.7.

2-7 2M/MTR INSPECTOR

2-7.1 Functions and Capabilities

1. 2M/MTR Inspectors are capable of performing all tasks required of Microminiature Electronics Repair Technicians (paragraph 2-2.1) and MTR Technicians (paragraph 2-3.1).
 2. Technicians certified as 2M/MTR Inspectors are authorized to:
 - a. Perform 2M/MTR repair site certifications.
 - b. Perform 2M and MTR technician recertifications.
 - c. Evaluate, advise, and assist local 2M and MTR technicians.
 - d. Introduce and demonstrate new technologies to recertifying 2M and MTR technicians.
-

2-7.2 Initial Certification Requirements

1. To become a 2M/MTR/FOTR Inspector, personnel must:
 - a. Complete a previous tour as a 2M/MTR Technician and/or 2M Instructor and be either assigned or in transit to an activity requiring 2M/MTR/FOTR Inspectors.
 - b. Hold the rank of E-7 or above, or a General Schedule GS-12 or above.
 - c. [For active duty NAVAIR 2M/MTR Inspectors] hold the certification of 2M/MTR Recertifier, and shall be designated as the 2500 Miniature /Microminiature (2M) Repair Program Manager.
 1. Complete steps 2-7.2.2(a), (b), (c), (d.1), and (f).
2. To receive initial certification, the technician must demonstrate proficiency in performing the following tasks:
 - a. Complete the Module Test and Repair Equipment Operator Course, A-100-0076.
 - b. Complete the 2M/MTR Technician Recertifier Course, A-100-0058, or the 2M/MTR Technician Recertifier Requalification Course, A-100-0144, as appropriate.
 - c. Attend the semi-annual 2M/MTR/FOTR Instructor & Inspector Training.
 - d. Complete the 2M/MTR/FOTR Inspector Job Qualification Requirement (JQR) (Appendix G) under the instruction of a currently certified 2M/MTR/FOTR Fleet Coordinator or 2M/MTR/FOTR Inspector.
 1. [NAVAIR 2M/MTR Inspectors shall complete the 2M/MTR Inspector Job Qualification Requirement (JQR) (Appendix G-1) under the observation and instruction of the command designated 2M Program Monitor.]

- e. Complete the FOTR Inspector JQR (Appendix H) under the instruction of a currently certified 2M/MTR/FOTR Fleet Coordinator, FOTR Inspector, or FOTR Certification Agent.
- f. Satisfactorily perform 2M and MTR technician recertifications, 2M/MTR site certifications, and 2M/MTR/FOTR reporting procedures under the instruction of a currently certified 2M/MTR/FOTR Fleet Coordinator or 2M/MTR/FOTR Inspector.
 - 1. NAVAIR 2M/MTR Inspectors shall perform 2M and MTR technician recertifications, 2M/MTR site certifications, and reporting procedures under the instruction of the command designated 2M Program Monitor.
- g. Demonstrate proficiency by individually completing a full 2M/MTR repair site certification under the observation of the 2M/MTR/FOTR Fleet Coordinator.

2-7.3 Initial Certification Reporting Requirements

- 1. Upon completion of the initial certification requirements:
 - a. The 2M/MTR/FOTR Inspector's command shall forward a list of qualifications and the completed JQR to the cognizant 2M/MTR/FOTR Fleet Coordinator.
 - b. The 2M/MTR/FOTR Fleet Coordinator shall issue a 2M/MTR/FOTR Inspector Certification Letter (Appendix J) to the certifying 2M/MTR/FOTR Inspector.
 - c. The 2M/MTR/FOTR Fleet Coordinator shall issue a 2M/MTR/FOTR Certification Identification Card (Appendix A) to the certifying 2M/MTR/FOTR Inspector. 2M/MTR/FOTR Certification Identification Card forms are available for download on the 2M/MTR/FOTR SharePoint Database site.
 - d. The 2M/MTR/FOTR Fleet Coordinator shall enter the certification information in the 2M/MTR/FOTR database.

2-7.4 Recertification Requirements

- 1. 2M/MTR/FOTR and NAVAIR 2M/MTR Inspectors shall complete the 2M/MTR Technician Recertifier Requalification Course, A-100-0144 every 18 months.
- 2. 2M/MTR/FOTR Inspectors shall attend a minimum of one 2M/MTR/FOTR Instructor & Inspector Training every 12 months.
 - a. A 2M/MTR/FOTR Inspector's attendance at a 2M/MTR/FOTR Inspector & Inspector Training may be extended to 18 months by the cognizant 2M/MTR/FOTR Fleet Coordinator to accommodate scheduling conflicts.
- 3. The cognizant 2M/MTR/FOTR Fleet Coordinator shall recertify 2M/MTR/FOTR Inspectors every 12 months as part of the 2M/MTR/FOTR Inspector Site Certification process as outlined in paragraph 3-6.3. The 2M/MTR/FOTR Fleet Coordinator certifies the 2M/MTR/FOTR Inspector as qualified to conduct 2M/MTR/FOTR repair site certifications and technician recertifications.

- a. A 2M/MTR/FOTR Inspector's certification is extendable to 18 months by the cognizant 2M/MTR/FOTR Fleet Coordinator to accommodate scheduling conflicts.
4. 2M/MTR/FOTR Inspectors must individually demonstrate proficiency by completing a full 2M/MTR/FOTR repair site certification under the observation of the 2M/MTR/FOTR Fleet Coordinator.

2-7.5 Recertification Standards

1. The 2M/MTR Technician Recertifier Requalification Course, A-100-0144, shall be completed successfully.
2. The 2M/MTR/FOTR Inspector shall satisfactorily conduct a 2M/MTR/FOTR repair site certification under the observation of the 2M/MTR/FOTR Fleet Coordinator.

2-7.6 Recertification Reporting Requirements

1. Upon completion of the 2M/MTR/FOTR Inspector recertification requirements:
 - a. The 2M/MTR/FOTR Fleet Coordinator shall issue a 2M/MTR/FOTR Inspector Certification Letter (Appendix J) to the recertifying 2M/MTR/FOTR Inspector.
 - b. The 2M/MTR/FOTR Fleet Coordinator shall issue a 2M/MTR/FOTR Certification Identification Card (Appendix A) to the recertifying 2M/MTR Inspector. 2M/MTR/FOTR Certification Identification Card forms are available for download on the 2M/MTR/FOTR SharePoint Database site.
 - c. The 2M/MTR/FOTR Fleet Coordinator shall enter the recertification information in the 2M/MTR/FOTR database.

2-7.7 Recertification Failure

1. 2M/MTR/FOTR Inspectors may be decertified during the certification process by failing to meet any of the criteria listed in paragraph 2-7.4.
 - a. The 2M/MTR/FOTR Fleet Coordinator shall provide notification of inability to recertify to the 2M/MTR/FOTR Inspector's command and the 2M Certification Agent.
 1. For active duty NAVSEA 2M/MTR/FOTR Inspectors, the 2M/MTR/FOTR Fleet Coordinator shall forward a completed NAVPERS Form 1221/6 Navy Enlisted Classification (NEC) Change Request to the 2M/MTR/FOTR Inspector's Commanding Officer requesting their concurrence and signature to remove the 2M/MTR/FOTR Inspector's NEC.

2-7.8 Substandard Performance Decertification

1. 2M/MTR Inspectors identified as providing substandard 2M/MTR recertification are decertified by their command and required to schedule remediation with the 2M/MTR/FOTR Fleet Coordinator.

- a. The 2M/MTR/FOTR Fleet Coordinator shall provide remedial training in the areas identified as deficient.
- b. If remediation is unsuccessful, the 2M/MTR/FOTR Fleet Coordinator shall follow the reporting procedures described in paragraph 2-7.7.

2-8 FIBER OPTIC TEST AND REPAIR (FOTR) INSPECTOR

2-8.1 Functions and Capabilities

1. FOTR Inspectors are capable of performing all tasks required of FOTR Technicians (paragraph 2-5.1).
 2. Technicians certified as FOTR Inspectors are authorized to:
 - a. Perform O and I-Level FOTR work center or repair site certifications.
 - b. Perform O-Level FOTR technician recertifications.
 - c. Evaluate, advise, and assist local FOTR technicians.
 - d. Introduce and demonstrate new technologies to recertifying FOTR technicians.
-

2-8.2 Initial Certification Requirements

1. To become a FOTR Inspector, personnel must have:
 - a. Completed a previous tour as a FOTR Technician and/or FOTR Instructor and be either assigned or in transit to an activity requiring FOTR Inspectors.
 - b. Hold the rank of E-8 or above, or a General Schedule GS-12 or above.
2. To receive initial certification, the technician must demonstrate proficiency in performing the following tasks:
 - a. Complete Fiber Optic Maintainer requirements as defined in MIL-STD-1678-1D Requirement 1306.
 - b. Attend the semi-annual 2M/MTR/FOTR Instructor & Inspector Training.
 - c. Complete the FOTR Inspector Job Qualification Requirement (JQR) (Appendix H) under the instruction of a currently certified 2M/MTR/FOTR Fleet Coordinator, FOTR Inspector or FOTR Certification Agent.

- d. Satisfactorily perform FOTR technician recertifications, FOTR site certifications, and FOTR reporting procedures under the instruction of a currently certified 2M/MTR/FOTR Fleet Coordinator, FOTR Inspector or FOTR Certification Agent.
- e. The 2M/MTR/FOTR Fleet Coordinator or FOTR Certification Agent shall accompany and conduct a final observation of the technician during a FOTR repair site certification.

2-8.3 Initial Certification Reporting Requirement

1. Upon completion of the initial certification requirements:
 - a. The FOTR Inspector's command shall forward a list of qualifications and the completed JQR to the cognizant 2M/MTR/FOTR Fleet Coordinator or the FOTR Certification Agent.
 - b. The 2M/MTR/FOTR Fleet Coordinator or FOTR Certification Agent shall issue a 2M/MTR/FOTR Inspector Certification Letter (Appendix J) to the certifying FOTR Inspector.
 - c. The 2M/MTR/FOTR Fleet Coordinator or FOTR Certification Agent shall enter the certification information in the 2M/MTR/FOTR database.

2-8.4 Recertification Requirements

1. FOTR Inspectors shall complete the recertification requirements per MIL-STD-1678-1D Requirement 1306, Installer section.
 - a. This includes attending an abbreviated I-Level refresher course every 36 months offered off the CFOTL and covering all eight modules. Refresher course demonstrates the Inspector's ability to perform FO-related tasks, repairs and troubleshooting for most needs occurring at the I-level.
 - b. FOTR Inspectors shall attend a minimum of one 2M/MTR/FOTR Instructor & Inspector Training every 12 months.
2. The cognizant 2M/MTR/FOTR Fleet Coordinator or FOTR Certification Agent shall recertify FOTR Inspectors every 12 months as part of the FOTR Inspector Site Certification process as outlined in paragraph 3-7.3. The 2M/MTR/FOTR Fleet Coordinator or FOTR Certification Agent certifies the FOTR Inspector as qualified to conduct FOTR repair site certifications and technician recertifications.
3. FOTR Inspectors must demonstrate proficiency by completing a FOTR repair site certification under the observation of the 2M/MTR/FOTR Fleet Coordinator or FOTR Certification Agent.

2-8.5 Recertification Standards

1. The recertification requirements of MIL-STD-1678-1 Requirement 1306 shall be completed successfully.
2. The FOTR Inspector shall satisfactorily conduct a FOTR work center or repair site

certification and a technician recertification under the observation of the 2M/MTR/FOTR Fleet Coordinator or FOTR Certification Agent.

2-8.6 Recertification Reporting Requirements

1. Upon completion of the FOTR Inspector recertification requirements:
 - a. The 2M/MTR/FOTR Fleet Coordinator or FOTR Certification Agent shall issue a 2M/MTR/FOTR Inspector Certification Letter (Appendix J) to the recertifying FOTR Inspector.
 - b. The 2M/MTR/FOTR Fleet Coordinator or FOTR Certification Agent shall enter the recertification information in the 2M/MTR/FOTR database.

2-8.7 Recertification Failure

1. FOTR Inspectors may be decertified during the certification process by failing to meet any of the criteria listed in paragraph 2-8.5.
 - a. The 2M/MTR/FOTR Fleet Coordinator shall provide notification of inability to recertify to the FOTR Inspector's command and the FOTR Certification Agent.

2-8.8 Substandard Performance Decertification

1. FOTR Inspectors identified as providing substandard FOTR technician recertification are decertified by their command and are required to schedule remediation with the 2M/MTR/FOTR Fleet Coordinator.
 - a. The 2M/MTR/FOTR Fleet Coordinator shall provide remedial training in the areas identified as deficient.
 - b. If remediation is unsuccessful, the 2M/MTR/FOTR Fleet Coordinator shall follow the reporting procedures described in paragraph 2-8.7.

2-9 2M INSTRUCTOR

2-9.1 Functions and Capabilities

1. 2M Instructors are capable of performing all tasks required of Microminiature Electronics Repair Technicians (paragraph 2-2.1).
2. Technicians certified as 2M Instructors are authorized to conduct the following courses:
 - a. Miniature Electronics Repair, A-100-0072.
 - b. Microminiature Electronics Repair, A-100-0073.

- c. 2M/MTR Technician Recertifier, A-100-0058.
- d. 2M/MTR Technician Recertifier Requalification, A-100-0144.
 - 1. To instruct the A-100-0058 and A-100-0144 courses, the 2M Instructor must be a qualified MTR Instructor.
- e. 2M Instructor Initial Skills, A-100-0135.
- f. 2M Instructor Certification/Recertification, A-100-0136.

2-9.2 Initial Certification Requirements

- 1. To be eligible for training at the 2M Instructor level, technicians must hold a current Microminiature Electronics Repair certification and be either assigned or in transit to an activity requiring 2M Instructors.
- 2. Military technicians must be E-5 through E-9.
- 3. To receive initial certification, the technician must complete the 2M Instructor Pipeline Course, A-100-0074, by demonstrating proficiency in performing the following tasks:
 - a. Demonstrate safety and ESD procedures.
 - b. Navy and Marine Corps personnel must complete the Navy Instructor Training Course, A-012-0077.
 - c. Coast Guard personnel must complete the Instructor Development Course.
 - d. Complete a project example, to a graded standard of 85, for each graded step of each lesson topic of the Miniature Electronics Repair Course, A-100-0072, and the Microminiature Electronics Repair Course, A-100-0073.
 - e. Satisfactorily demonstrate grading ability for each graded step of each lesson topic of the Miniature Electronics Repair Course, A-100-0072, and the Microminiature Electronics Repair Course, A-100-0073.
 - f. Personalize lesson plans and demonstration cards, and review the PowerPoint slides while observing a qualified 2M Instructor instruct each lesson topic and each demonstration in the Miniature Electronics Repair Course, A-100-0072, and the Microminiature Electronics Repair Course, A-100-0073.
 - g. Satisfactorily instruct each lesson topic and demonstration in the Miniature Electronics Repair Course, A-100-0072, and the Microminiature Electronics Repair Course, A-100-0073.

2-9.3 Initial Certification Reporting Requirements

- 1. Upon completion of the 2M Instructor Pipeline Course, A-100-0074:

- a. The certifying instructor shall issue a 2M/MTR/FOTR Certification Identification Card (Appendix A) to the certifying 2M Instructor. 2M/MTR/FOTR Certification Identification Card forms are available for download on the 2M/MTR/FOTR SharePoint Database site.
- b. The certifying instructor shall enter the certification information into the 2M/MTR/FOTR database.

2-9.4 Recertification Requirements

1. A 2M/MTR Inspector or 2M Certification Agent shall recertify 2M Instructors every 18 months at the Microminiature Electronics Repair level in accordance with the paragraph 2-2.4. If Microminiature Electronics Repair certification is not maintained, the 2M Instructor is not qualified to conduct 2M training.
2. The 2M Certification Agent shall certify the 2M Instructor's ability to conduct the courses listed in paragraph 2-9.1 every 12 months in conjunction with the 2M Training Site Certification Process, paragraph 3-3.3.
 - a. A 2M Instructor's certification is extendable to 18 months by the 2M Certification Agent to accommodate scheduling conflicts.
3. Satisfactorily perform a lecture and a demonstration under the observation of the 2M Certification Agent.
 - a. The 2M Certification Agent shall debrief the recertifying 2M Instructor's lecture and demonstration.
 - b. If required, the 2M Certification Agent shall provide and/or assign remedial training to the observed 2M Instructor to improve areas identified as deficient.
4. Primary or secondary instructor in one Miniature Electronics Repair Course and one Microminiature Electronics Repair Course in the preceding 12 months.
5. Two satisfactory technical evaluations in the preceding 12 months (one 2M lecture and one 2M demonstration).

2-9.5 Recertification Standards

1. Microminiature Electronics Repair recertification shall be in accordance with the Microminiature Electronics Repair Recertification Requirements, paragraph 2-2.4.
2. Each observed lecture and demonstration shall be conducted using current curriculum material, tools, equipment, safety requirements, ESD requirements, repair techniques, and soldering processes.

2-9.6 Recertification Reporting Requirements

1. The 2M Certification Agent shall document instructor recertification using a 2M Training Site Certification Letter/Enclosure (Appendix N).
2. The 2M Certification Agent shall issue a 2M/MTR/FOTR Certification Identification Card (Appendix A) to each recertifying 2M Instructor. 2M/MTR/FOTR Certification Identification Card forms are available for download on the 2M/MTR/FOTR SharePoint Database site.
3. The 2M Certification Agent shall enter the certification information in the 2M/MTR/FOTR database.

2-9.7 Remediation

1. If the 2M Instructor cannot satisfactorily present a lecture and/or demonstration during the 2M Training Site Certification in accordance with paragraph 2-9.5, the 2M Instructor shall be assigned a course of remediation by the 2M Certification Agent.
 - a. The 2M Certification Agent and Leading 2M Instructor shall develop a Plan of Action and Milestones, provide remedial training, and monitor the 2M Instructor until the course of remediation is completed.
 - b. If remediation is unsuccessful, the Lead 2M Instructor shall notify the 2M Certification Agent.

2-9.8 Recertification Failure

1. 2M Instructors may be decertified during the recertification process by failing to meet any of the criteria listed in paragraph 2-9.4. The 2M Certification Agent shall provide notification of inability to recertify to the instructor's command.
 - a. For active duty Navy 2M Instructors, the 2M Certification Agent shall forward a completed NAVPERS Form 1221/6 Navy Enlisted Classification (NEC) Change Request to the 2M Instructor's Commanding Officer requesting their concurrence and signature to remove 2M Instructor's NEC.

2-9.9 Substandard Performance Decertification

1. 2M Instructors identified as providing substandard 2M instruction shall not be assigned as primary instructors and are required to remediate with their Leading 2M Instructor.
 - a. The Leading 2M Instructor shall provide remedial training and monitor the 2M Instructor until the deficiencies are resolved.
 - b. If remediation is unsuccessful, the Leading 2M Instructor shall follow the reporting procedures described in paragraph 2-9.8.

2-9.10 Previously Qualified 2M Instructor Recertification Requirements

1. A previously qualified 2M Instructor returning to an instructor billet is required to successfully complete the Miniature/Microminiature Instructor Certification/Recertification Course, A-100-0136.
2. Upon completion of the A-100-0136 course, the certifying instructor shall follow the reporting procedures of paragraph 2-9.3.

2-10 MTR INSTRUCTOR

2-10.1 Functions and Capabilities

1. MTR Instructors are capable of performing all tasks required of MTR Technicians (paragraph 2-3.1).
2. Technicians certified as MTR Instructors are authorized to conduct the Module Test and Repair Equipment Operator course.

2-10.2 Initial Certification Requirements

1. To be eligible for training at the MTR Instructor level, technicians must hold a current MTR certification and be either assigned or in transit to an activity requiring MTR Instructors.
2. Military technicians must be E-5 through E-9.
3. To receive initial certification, the technician must demonstrate proficiency in performing the following tasks:
 - a. Navy and Marine Corps personnel must complete the Navy Instructor Training Course, A-012-0077.
 - b. Coast Guard personnel must complete the Instructor Development Course.
 - c. Personalize their lesson plan and review the PowerPoint slides while observing a qualified MTR Instructor instruct each lesson topic and lab of the A-100-0076 Module Test and Repair Equipment Operator course.
 - d. Satisfactorily instruct each lesson topic of the A-100-0076 Module Test and Repair Equipment Operator course.

2-10.3 Initial Certification Reporting Requirements

1. Upon completion of the MTR Instructor Qualification Process, the certifying MTR Instructor shall issue a 2M/MTR/FOTR Certification Identification Card (Appendix A) to the certifying technician. 2M/MTR/FOTR Certification Identification Card forms are available for download on the 2M/MTR/FOTR SharePoint Database site.

2. The certifying MTR Instructor shall enter the certification information in the 2M/MTR/FOTR database.

2-10.4 Recertification Requirements

1. A 2M/MTR Inspector or MTR Certification Agent shall recertify the MTR Instructor's MTR Technician skills every 18 months in accordance with paragraph 2-3.4. If MTR certification is not maintained, the MTR Instructor is not qualified to conduct MTR training.
2. The MTR Certification Agent shall certify the MTR Instructor's ability to conduct the A-100-0076, Module Test and Repair Equipment Operator course every 12 months in conjunction with the MTR Training Site Certification Process, paragraph 3-4.3.
 - a. An MTR Instructor's certification is extendable to 18 months by the MTR Certification Agent to accommodate scheduling conflicts.
3. The MTR Certification Agent shall observe each MTR Instructor perform a lecture.
 - a. The MTR Certification Agent shall provide remedial training to the observed MTR Instructor to improve areas identified as deficient.

2-10.5 Recertification Standards

1. MTR recertification shall be in accordance with the MTR Recertification Standards, paragraph 2-3.5.
2. Each observed lecture shall be conducted using current curriculum material, tools, equipment, safety requirements, ESD requirements, and troubleshooting techniques.

2-10.6 Recertification Reporting Requirements

1. The MTR Certification Agent shall document the certification process using a MTR Training Site Certification Letter/Enclosure (Appendix O).
2. The MTR Certification Agent shall issue a 2M/MTR/FOTR Certification Identification Card (Appendix A) to each recertifying MTR Instructor. 2M/MTR/FOTR Certification Identification Card forms are available for download on the 2M/MTR/FOTR SharePoint Database site.
3. The MTR Certification Agent shall enter the certification information in the 2M/MTR/FOTR database.

2-10.7 Remediation

1. If the MTR Instructor cannot satisfactorily present a lecture in accordance with paragraph 2-10.5, the MTR Instructor shall be remediated and required to satisfactorily present the substandard lecture to the MTR Certification Agent.

2-10.8 Recertification Failure

1. MTR Instructors may be decertified during the recertification process by failing to meet any of the criteria listed in paragraph 2-10.4.
 - a. The MTR Certification Agent shall provide notification of inability to recertify to the appropriate parent command.

2-10.9 Substandard Performance Decertification

1. MTR Instructors identified as providing substandard MTR instruction shall not be assigned as primary instructors and are required to remediate with their Leading MTR Instructor.
 - a. The Leading MTR Instructor shall provide remedial training and monitor the MTR Instructor until the deficiencies are resolved.
 - b. If remediation is unsuccessful, the Leading MTR Instructor shall follow the reporting procedures described in paragraph 2-10.8.

2-11 FIBER OPTIC TEST AND REPAIR (FOTR) INSTRUCTOR

2-11.1 Functions and Capabilities

1. FOTR Instructors are capable of performing all tasks required of FOTR Repair Technicians (paragraph 2-5.1).
2. FOTR Instructors are authorized to conduct the A-670-0063, Fiber Optic Maintenance Technician Course or certified NAVSEA equivalent.

2-11.2 Initial Certification Requirements

1. All prospective and current Fiber Optic Instructors must attend, or have previously attended a fiber optic repair course of instruction. This course must qualify or certify the prospective instructor to the I-Level of knowledge and experience based off requirements in MIL-STD-1678-1D, Requirement 1306. Maintainer or Installer skill set.
2. FOTR Instructor requirements for A-670-0063 are currently under the cognizance of Surface Combat System Training Command (SCSTC). SCSTC manages the contract for supplying course A-670-0063.
3. Instructors for CFOTL training organizations shall comply with the instructor requirements listed in NAVSEA DWG 8477552 and are certified by the FOTR Certification Agent.

4. Fiber Optic Instructors shall adhere to the following requirements contained in A-670-0063 Rev C CH-1 Instructor Certification Plan managed by SCSTC:
 - a. Instructor Indoctrination
 - b. Complete an Instructor Individual Development Plan (IDP)
 - c. Complete Instructor Qualification w/in 60 Days of IDP (or 4 days of reporting/hiring)
 - d. Certify to Teach
 - Instructor evaluations will be conducted on at least TWO CRITICAL, ONE CORE and ONE LAB topic in which the passing grade must be 85% or above
 - e. Instructor Proficiency
5. Military technicians must be E-5 through E-9
6. Instructors must demonstrate proficiency in the subject matter by passing the course comprehensive test(s) with a minimum score of 85%

2-11.3 Initial Certification Reporting Requirements

1. Instructor information shall be reported by SCSTC or the CFOTL organization to the FOTR Certification Agent.
2. The FOTR Certification Agent shall enter the certification information into the 2M/MTR/FOTR database.

2-11.4 Recertification Requirements

1. An FOTR Certification Agent shall recertify FO Instructors every 12 months during the annual FO Training Site recertification.
 - a. An FO Instructor's certification is extendable to 18 months by the FOTR Certification Agent to accommodate scheduling conflicts.
2. Satisfactorily perform a lecture and a demonstration under the observation of the FOTR Certification Agent.
 - a. Demonstrate proficiency in use of FO Test Equipment and proper use of Measurement Quality Jumpers (MQJs)
 - b. Demonstrate familiarity with class curriculum and fleet FO updates.
 - c. The FOTR Certification Agent shall debrief the recertifying FO Instructor's lecture and demonstration.

- d. If required, the FOTR Certification Agent shall provide and/or assign remedial training to the observed FO Instructor to improve areas identified as deficient.

2-11.5 Recertification Standards

1. Each observed lecture and demonstration shall be conducted using current curriculum, material, tools, test equipment, safety requirements, and repair techniques.

2-11.6 Recertification Reporting Requirements

1. Upon completion of lecture and demonstrations observed, results will be recorded in the Instructors personnel jacket and on the 2M/MTR/FOTR database.

2-11.7 Substandard Performance Decertification

1. SCSTC or the CFOTL organization shall inform the FOTR Certification Agent if an FOTR Instructor is removed for providing substandard Fiber Optic instruction during the intervals between formal FOTR Certification assessments.
2. FOTR Certification Agent can decertify an FO Instructor if the Instructor does not show familiarity with equipment, tools, MQJs and/or FO repair techniques and instruction.
3. A decertified FO Instructor will not be eligible to conduct FO Training until recertification is completed successfully. A decertified Instructor may attempt recertification IAW 2-11.4 within 30 days of being decertified.
4. The FOTR Certification Agent shall update the 2M/MTR/FOTR database as appropriate.

2-12 2M/MTR/FOTR FLEET COORDINATOR

2-12.1 Functions and Capabilities

1. The Commander, Navy Regional Maintenance Center (CNRMC) routinely maintains qualified 2M/MTR/FOTR Fleet Coordinators at Southeast Regional Maintenance Center (SERMC) and Southwest Regional Maintenance Center (SWRMC).
2. 2M/MTR/FOTR Fleet Coordinators are capable of performing all tasks required of Microminiature Electronics Repair Technicians (paragraph 2-2.1), MTR Technicians (paragraph 2-3.1), FOTR Technicians (paragraph 2-5.1), 2M/MTR Inspectors (paragraph 2-6.1.2), and FOTR Inspectors (paragraph 2-8.1).

3. Technicians certified as 2M/MTR/FOTR Fleet Coordinators are authorized to:
 - a. Manage the Fleet 2M/MTR/FOTR Program.
 - b. Administrate 2M/MTR and FOTR Program inspections and certifications in their respective geographical areas.
 - c. Perform 2M/MTR and FOTR site certifications.
 - d. Perform 2M Technician, MTR Technician and FOTR Repair Technician recertifications.
 - e. Perform 2M/MTR and FOTR Inspector certifications.
 - f. Provide feedback concerning 2M/MTR/FOTR Program matters.
 - g. Manage 2M/MTR and FOTR activities where 2M/MTR and FOTR Inspectors are assigned.

2-12.2 Initial Certification Requirements

1. Appointment of 2M/MTR/FOTR Fleet Coordinators shall be coordinated with, and authorized by the NAVSEA 2M/MTR/FOTR Program Manager.
2. To become a 2M/MTR/FOTR Fleet Coordinator, personnel must have:
 - a. Completed a previous tour as a 2M/MTR/FOTR Inspector and/or a 2M/MTR Instructor.
 - b. Be either assigned or in transit to a command requiring a 2M/MTR/FOTR Fleet Coordinator.
 - c. Hold the rank of E-8 or above, or a General Schedule GS-12 (or equivalent) or above.
3. To receive initial certification, the technician must demonstrate proficiency in performing the following tasks:
 - a. Complete the 2M/MTR Technician Recertifier Course, A-100-0058, or the 2M/MTR Technician Recertifier Requalification Course, A-100-0144, as appropriate.
 - b. Attend the semi-annual 2M/MTR/FOTR Instructor & Inspector Training.
 - c. Complete the 2M/MTR Inspector JQR (Appendix G) under the instruction of a currently certified 2M/MTR/FOTR Fleet Coordinator or 2M/MTR Inspector.
 - d. Complete the FOTR Inspector JQR (Appendix H) under the instruction of a currently certified 2M/MTR/FOTR Fleet Coordinator, FOTR Inspector, or FOTR Certification Agent.
 - e. Complete Fiber Optic Maintainer requirements as defined in MIL-STD-1678 1D Requirement 1306.
 - f. Satisfactorily perform 2M, MTR and FOTR Technician recertifications, 2M/MTR and FOTR Site certifications and 2M/MTR/FOTR Personnel and Site reporting procedures under the observation of the 2M, MTR and FOTR Certification Agents.

2-12.3 Initial Certification Reporting Requirements

1. Upon completion of the initial certification requirements:
 - a. The 2M, MTR and FOTR Certification Agents shall complete 2M/MTR/FOTR Fleet Coordinator Certification Letters (Appendix K) and forward the certification letters to the NAVSEA 2M/MTR/FOTR Program Manager for signature.
 - b. The 2M, MTR and FOTR Certification Agents shall enter the certification information in the 2M/MTR/FOTR database.

2-12.4 Recertification Requirements

1. 2M/MTR/FOTR Fleet Coordinators shall complete the 2M/MTR Technician Recertifier Qualification Course, A-100-0144 every 18 months.
2. 2M/MTR/FOTR Fleet Coordinators shall complete the requirements of MIL-STD-1678-1 Requirement 1306 every 36 months.
3. 2M/MTR/FOTR Fleet Coordinators shall attend 2M/MTR/FOTR Instructor & Inspector Training every 6 months.
 - a. A 2M/MTR Inspector's attendance at a 2M/MTR/FOTR Inspector & Inspector Training is extendable to 12 months by the 2M Certification Agent to accommodate scheduling conflicts.
4. The 2M, MTR and FOTR Certification Agents shall recertify the 2M/MTR/FOTR Fleet Coordinators every 12 months in conjunction with the 2M/MTR Inspector Site Certification process as outlined in paragraph 3-6.3 and the FOTR Inspector Site Certification process as outlined in paragraph 3-7.3. The 2M, MTR and FOTR Certification Agents certify the 2M/MTR/FOTR Fleet Coordinator as qualified to manage the fleet 2M/MTR/FOTR program and as qualified to conduct 2M/MTR/FOTR Repair and Inspector Site certifications.
 - a. A 2M/MTR/FOTR Fleet Coordinator's certification is extendable to 18 months by a 2M, MTR or FOTR Certification Agent to accommodate scheduling conflicts.
5. 2M/MTR/FOTR Fleet Coordinators must demonstrate proficiency by completing a 2M/MTR/FOTR Repair Site or 2M/MTR/FOTR Inspector Site certification under the observation of the 2M, MTR and FOTR Certification Agents.

2-12.5 Recertification Standards

1. The 2M/MTR Technician Recertifier Qualification Course, A-100-0144, and the requirements of MIL-STD-1678-1 Requirement shall be completed successfully.
2. The 2M/MTR/FOTR Fleet Coordinator shall satisfactorily manage the 2M/MTR/FOTR Repair and Inspector sites under their cognizance.

3. The 2M/MTR/FOTR Fleet Coordinator shall satisfactorily conduct a 2M/MTR/FOTR Repair Site or 2M/MTR/FOTR Inspector Site certification under the observation of the 2M, MTR and FOTR Certification Agents.

2-12.6 Recertification Reporting Requirements

1. Upon successful completion of the 2M/MTR/FOTR Fleet Coordinator recertification requirements:
 - a. The 2M, MTR and FOTR Certification Agents shall complete 2M/MTR/FOTR Fleet Coordinator Certification Letters (Appendix K) and forward the certification letters to the NAVSEA 2M/MTR/FOTR Program Manager for signature.
 - b. The 2M, MTR and FOTR Certification Agents shall enter the certification information in the 2M/MTR/FOTR database.

2-12.7 Recertification Failure

1. 2M/MTR/FOTR Fleet Coordinators may be decertified during the certification process by failing to meet any of the criteria listed in paragraph 2-12.4.
 - a. The 2M, MTR and/or FOTR Certification Agent shall provide notification of inability to recertify to the Fleet Coordinator's command and to the NAVSEA 2M/MTR/FOTR Program Manager.
 - b. It is the Fleet Coordinator's command and the NAVSEA 2M/MTR/FOTR Program Manager's responsibility to take appropriate action.

2-12.8 Substandard Performance Decertification

1. 2M/MTR/FOTR Fleet Coordinators identified as providing substandard 2M/MTR/FOTR management or recertification are decertified by their command and are required to schedule remediation with the 2M, MTR and/or FOTR Certification Agents.
 - a. The 2M, MTR and/or FOTR Certification Agents shall provide remedial training in the areas identified as deficient.
 - b. If remediation is unsuccessful, the 2M, MTR and/or FOTR Certification Agents shall follow the reporting procedures described in paragraph 2-12.7.

2-13 2M CERTIFICATION AGENT

2-13.1 Functions and Capabilities

1. 2M Certification Agents are appointed by the NAVSEA 2M/MTR/FOTR Program Manager who shall annually task them to perform the 2M Certification Agent functions.

2. In accordance with NAVSEAINST 4790.17, the Naval Undersea Warfare Center Detachment, Field Engineering Office, Norfolk shall act as the 2M Certification Agent.
3. The 2M Certification Agent is an inherently government position and the position shall be filled by a federal government employee.
4. 2M Certification Agents are capable of performing all tasks required of Microminiature Electronics Repair Technicians (paragraph 2-2.1), 2M Instructors (paragraph 2-9.1) and 2M/MTR Inspectors (paragraph 2-7.1).
5. Personnel certified as 2M Certification Agents act on behalf of the Naval Sea Systems Command on matters relating to the 2M Program and the 2M certification process.
6. 2M Certification Agents are authorized to perform certifications of 2M Instructors, 2M Training Sites and 2M/MTR/FOTR Fleet Coordinators.
 - a. When required, the 2M Certification Agent may perform the duties of a 2M Instructor or 2M/MTR Inspector.
7. The 2M Certification Agent shall advise and assist all 2M/MTR/FOTR personnel in matters concerning the 2M Program.
8. The 2M Certification Agent shall ensure the 2M/MTR/FOTR SharePoint site has current information on:
 - a. Tool lists.
 - b. Facility certification and reporting procedures.
 - c. 2M Program updates.
 - d. 2M documentation.

2-13.2 Initial Requirements

1. Effective oral communication skills to provide demonstrations of new and established methods of repair.
2. Effective written communication skills to incorporate new techniques into existing documentation, prepare reports, and make recommendations to appropriate command authorities.
3. Prior experience as a 2M/MTR Inspector and/or 2M Instructor.
4. Thorough knowledge of 2M soldering techniques, 2M repair techniques, 2M standards and ESD handling procedures to inspect facilities and personnel for conformance to 2M/MTR/FOTR Program requirements.

2-14 MTR CERTIFICATION AGENT

2-14.1 Functions and Capabilities

1. MTR Certification Agents are appointed by the NAVSEA 2M/MTR/FOTR Program Manager who shall annually task them to perform the MTR Certification Agent functions.
2. In accordance with NAVSEAINST 4790.17, the Naval Undersea Warfare Center Detachment, Field Engineering Office, Norfolk shall act as the MTR Certification Agent.
3. The MTR Certification Agent is an inherently government position and the position shall be filled by a federal government employee.
4. MTR Certification Agents are capable of performing all tasks required of MTR Technicians (paragraph 2-3.1) and MTR Instructors (paragraph 2-10.1).
5. Personnel certified as MTR Certification Agents act on behalf of the Naval Sea Systems Command on matters relating to MTR Program and MTR certification process.
6. The MTR Certification Agent performs certifications of MTR Instructors, MTR training sites, and 2M/MTR/FOTR Fleet Coordinators.
 - a. When required, the MTR Certification Agent may perform MTR technician recertification and perform the duties of an MTR Instructor.
7. The MTR Certification Agent shall advise and assist all personnel in matters concerning the MTR Program.
8. The MTR Certification Agent shall ensure the 2M/MTR/FOTR SharePoint site has current information on:
 - a. MTR equipment.
 - b. Facility certification and reporting procedures.
 - c. MTR Program updates.
 - d. MTR documentation.

2-14.2 Initial Requirements

1. Effective oral communication skills to provide demonstrations of new and established methods of test and repair.
2. Effective written communication skills to incorporate new techniques into existing documentation, prepare reports, and make recommendations to appropriate command authorities.

3. Thorough knowledge of MTR troubleshooting techniques, system fault isolation skills, operational software, and ESD handling procedures to inspect MTR facilities and personnel for conformance to 2M/MTR/FOTR Program requirements.

2-15 FOTR CERTIFICATION AGENT

2-15.1 Functions and Capabilities

1. FOTR Certification Agents are appointed by the NAVSEA 2M/MTR/FOTR Program Manager who shall annually task them to perform the FOTR Certification Agent functions.
2. In accordance with NAVSEAINST 4790.17, the Naval Surface Warfare Center, Dahlgren Division shall act as the FOTR Certification Agent.
3. The FOTR Certification Agent is an inherently government position and the position shall be filled by a federal government employee.
4. The FOTR Certification Agent has knowledge and cognizance over all tasks required of FOTR Repair Technicians (paragraph 2-5.1), FOTR Instructors (paragraph 2-11.1) and FOTR Inspectors (paragraph 2-8.1).
5. Personnel certified as FOTR Certification Agents act on behalf of the Naval Sea Systems Command on matters relating to the Fiber Optic Test and Repair Program and the Fiber Optic Test and Repair certification process.
6. The FOTR Certification Agent is authorized to perform certifications of FOTR Instructors, FOTR Training Sites and 2M/MTR/FOTR Fleet Coordinators.
7. When required, the FOTR Certification Agent may perform the duties of a FOTR Instructor or FOTR Inspector.
8. The FOTR Certification Agent shall advise and assist all FOTR personnel in matters concerning the Fiber Optic Test and Repair Program.
9. The FOTR Certification Agent shall ensure the NSWC Dahlgren Fiber Optic Website and 2M/MTR/FOTR SharePoint site has current information on:
 - a. Tool lists.
 - b. Facility certification and reporting procedures.
 - c. FOTR Program updates.
 - d. FOTR documentation.

2-15.2 Initial Requirements

1. Thorough knowledge of Fiber Optic standards, specifications, test and repair techniques to inspect

facilities and personnel for conformance to Fiber Optic Test and Repair Program requirements.

2M/MTR/FOTR Site Certification

3-1 2M/MTR REPAIR SITES

1. Organizational level (O-level) and Intermediate level (I-level) 2M/MTR workstations shall be fully outfitted as specified in Appendix F, including consumables.
2. Depot level (D-level) 2M/MTR facilities shall maintain at least one fully outfitted Miniature Electronics Repair workstation and/or one fully outfitted Microminiature Electronics Repair workstation as specified in Appendix F, including consumables.
 - a. Other 2M workstations used daily by D-level artisans shall be outfitted with 2M equipment and materials as needed for their workload.

3-1.1 Initial Certification Requirements

1. Authority to diagnose and repair electronics assemblies shall be granted only to those maintenance activities evaluated as being capable of providing quality 2M/MTR electronics diagnostic testing and repair.
2. Activities performing organizational, intermediate, depot, or contractor (where 2M/MTR requirements are invoked in the contract) 2M/MTR diagnostic testing and repair on Navy procured electronics assemblies, regardless of physical location, shall be certified by a 2M/MTR Inspector.
3. A 2M/MTR site shall be identified as capable of performing diagnostic testing and repair when personnel, equipment, and facility requirements are met in accordance with the 2M/MTR Repair Site Certification Process, paragraph 3-1.3.

3-1.2 Initial Certification Reporting Requirements

1. Certification results shall be presented directly to the Commanding Officer, the Officer in Charge, or their designated representative.
2. The 2M/MTR Inspector shall document the certification process by completing, and forwarding as appropriate, a 2M/MTR Repair Site Certification Letter (Appendix L).
 - a. NAVSEA 2M/MTR Repair Site Certification Letters are signed by the inspecting activity.
 1. NAVSEA 2M/MTR Repair Site Certification Letters are forwarded to the cognizant 2M/MTR/FOTR Fleet Coordinator for review prior to signature.

- b. NAVAIR 2M/MTR Repair Site Certification Letters shall be signed by the Aviation Maintenance Officer, conducted by command designated 2500 Miniature /Microminiature (2M) Repair Program Manager.
 1. NAVAIR 2M/MTR Repair Site Certification Letters are forwarded to the command's Quality Assurance Officer for review prior to signature via the command's cognizant 2M/MTR Program Monitor.
3. The 2M/MTR/FOTR Inspector shall attach a copy of the signed 2M/MTR Repair Site Certification Letter to the 2M/MTR Repair Site record in the 2M/MTR/FOTR database.
4. The 2M/MTR/FOTR Inspector shall issue a 2M/MTR Repair Site Certification Certificate.
5. The 2M/MTR/FOTR Inspector shall document the site certification data in the 2M/MTR/FOTR database.

3-1.3 2M/MTR Repair Site Certification Process

1. Identify activity (with 2M UIC) being certified.
2. List the date of the certification.
3. Identify the certifying activity.
4. Conduct an arrival briefing with command representative [Commanding Officer (CO), Officer in Charge (OIC), Electronics Material Officer (EMO), Combat Systems Maintenance Officer (CSMO), Maintenance Officer (MO) or Department Head, etc.], and appropriate 2M/MTR personnel (2M/MTR Work Center Supervisor, 2M/MTR Technician, etc.).
5. Identify all assigned 2M/MTR personnel including:
 - a. Name
 - b. Rate, Rank
 - c. Planned rotation date (PRD)
 - d. Work center
 - e. Certification level
 - f. Certification expiration date.
 1. The 2M/MTR Inspector performing the certification should also assist the activity in reviewing applicable manning documents for personnel with a 2M/MTR NEC or Competency Code who are out of certification to evaluate retention of the NEC or Competency Code.

2. A command manpower review and NEC realignment is recommended to account for those 2M/MTR Technicians no longer assigned 2M/MTR responsibilities due to changing job position or advancement.
6. Inventory and verify performance of the applicable 2M/MTR equipment.
 - a. Document the serial number(s), quantities, and location(s) of the following equipment in the Certification Letter and the 2M/MTR/FOTR database, noting differences with the current configuration:
 1. 2M Electronic Rework Power Unit: PRC-2000, MBT-250, ST-25, etc.
 2. Auxiliary Equipment: microscope, light sources, ESD equipment, and preheater
 3. MTR Equipment: MTR Test Station Controller, MTR Test Equipment, ESD equipment, Uninterruptible Power Supply, and associated accessories
 - b. Ensure digital thermometer, SCAT 4213, is in the work center or available for use.
 - c. Inventory consumables, tools, and support equipment using the 2M/MTR/FOTR Workstation Checklist (Appendix F).
 - d. Verify applicable 2M/MTR equipment is operational in accordance with the 2M/MTR Equipment Verification Process (Appendix I).
7. Discuss and evaluate proposed changes in tools, equipment, techniques, documentation and 2M/MTR training curriculum.
8. Verify a command 2M/MTR instruction has been written and implemented.
9. Verify all support equipment used for 2M/MTR diagnostic testing and repair is supported by the current allowance list (APL).
 - a. Provide the technicians with information regarding approved changes to the following allowance lists, as applicable:
 1. Coordinated Shipboard Allowance List (COSAL)
 2. Coordinated Shore-Based Allowance List (COSBAL)
 3. 2M Electronic Repair System APL
 4. PRC2000-2M NAVAIR Unique APL
 5. Portable 2M Kit APL
 6. AN/USM-674(V) APL
 7. AN/USM-726(V1) APL
 8. AN/USM-726(V2) APL
 9. 2M/MTR Piece Parts APL
 10. 2M Workbench APL

10. Verify all equipment used for 2M/MTR is included into the activity's preventive maintenance program and maintenance is being performed and documented in accordance with the following Maintenance Index Pages (MIPs), Preoperational Checklists (PREOPs) or Maintenance Requirement Cards (MRCs), as applicable.
 - a. MIP 6652/005, PACE Soldering Stations (NAVSEA)
 - b. MIP 4911/003, Module Test and Repair (MTR) System (NAVSEA)
 - c. PREOP 17-600-193-6-1, PRC-2000-2M System Electronic Rework Power Unit (NAVAIR)
 - d. MRC 17-600-193-6-2, PACE Soldering Station (NAVAIR)
 - e. MRC 17-600-193ESD-6-1, Electrostatic Discharge (ESD) Protection Devices (NAVAIR)
 - f. PREOP 17-600-572-6-1, Miniature/Microminiature (2M) Microscope and Miniature/Microminiature (2M) Display Trainer (NAVAIR)
 - g. MRC 17-600-572-6-2 Miniature/Microminiature (2M) Microscope and Miniature/Microminiature (2M) Display Trainer (NAVAIR)
 - h. MRC 17-600-525-6-2 ProTrack Model 20/ProTrack Scanner I (NAVAIR)
11. Evaluate the site to ensure compliance with NAVAIR 01-23-1A / NAVSEA SE004-AK-TRS-010/2M Standard Maintenance Practices for 2M Electronics Assembly Repair, WP 003 00, paragraph 03-4.4, 2M Facility Requirements.
12. Evaluate the 2M/MTR workbench to ensure compliance with NAVAIR 01-23-1A / NAVSEA SE004-AK-TRS-010/2M Standard Maintenance Practices for 2M Electronics Assembly Repair, WP 003 00, paragraph 03-4.5, 2M Workstation.
13. Verify that at least one paper or electronic copy of applicable 2M/MTR reference documents is available at or near the workstation. Multiple workstations in the same location do not require multiple copies of each document.
 - a. NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M, Standard Maintenance Practices Miniature/Microminiature (2M) Electronics Assembly Repair Manual
 - b. NAVSEA S9665-CY-OMP-010/PRC-2000/U / NAVAIR 17-15-99, PRC-2000 Technical Manual or NAVSEA SE010-A7-MMC-010/MBT-250-SD/U, MBT-250 Technical Manual
 - c. NAVSEA ST900-HN-GPT-010 Department of Defense Module Test and Repair Users Manual
 - d. NAVSEA TE000-AA-MAN-010/2M / NAVAIR SE-004-PQS-000, Certification Manual for Miniature/Microminiature Electronics Module Test and Repair/Fiber Optic Test and Repair (2M/MTR/FOTR) Program
14. Verify that the 2M/MTR work center has all the materials required for ESD prevention and is following proper ESD procedures.

15. Verify 2M/MTR maintenance actions are documented in the Module Test and Repair Tracking System (MTRTS).
 - a. Verify the MTRTS is being used in accordance with established procedures to document circuit card assembly screening and repair.
 - b. Measure the overall effectiveness of the 2M/MTR Program by comparing the command's requisition data to the MTRTS.
 - c. List 2M/MTR screening, CASREPs averted, cost avoidance, and rate of effectiveness data.
16. Verify 2M repairs are documented in accordance with OPNAVINST 4790.4 Chapters 6 and 7, via OPNAV 4790/2K Ship's Maintenance Action Form (NAVSEA).
 - a. Verify 2M repairs are documented in accordance with COMNAVAIRFORINST 4790.2 via OPNAV 4790/60 Visual Information System/Maintenance Action Form (NAVAIR).
17. Verify the supply department personnel are fully aware of the policies and procedures contained in COMFLTFORCOMINST 4790.3 (JFMM), and NAVSUP Publication 485, Afloat Supply Procedures.
18. Summarize the certification.
 - a. Major Deficiencies
 1. A major deficiency prevents the capability to perform any specific task of a 2M repair or MTR fault isolation and shall result in:
 - a) Downgrading of a 2M station from Microminiature Electronics Repair to Miniature Electronics Repair or
 - b) The decertification of either the 2M and/or MTR site capabilities.
 - c) Examples of 2M/MTR major deficiencies include:
 - 1) Any deficiency that impacts personnel or equipment safety.
 - 2) Missing ESD control capabilities (e.g. missing or defective ESD mat or wrist strap).
 - 3) Any combination of missing tools or inoperable 2M or MTR equipment that would prevent completing 2M/MTR troubleshooting and repair.
 - 4) Missing eye protection
 - 5) 2M/MTR site failing to meet the minimum standards of NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M Standard Maintenance Practices for 2M Electronics Assembly Repair, WP003 00, paragraph 04-4.4, 2M Facility Requirements.
 - 6) 2M/MTR site failing to meet the minimum standards of NAVAIR 01-23-1A / NAVSEA SE004-AK-TRS-010/2M Standard Maintenance Practices for 2M Electronics Assembly Repair, WP 003 00, paragraph 03-4.5, 2M Workstation.
 - 7) A technician is unable to properly operate the 2M/MTR equipment at their workstation (footswitches, microscope, etc.).

- 8) Insufficient quantity of individual power receptacles to support required 2M and/or MTR equipment.
- 9) Lack of required certified 2M/MTR technicians assigned to each 2M/MTR work center.
- b. Minor Deficiencies
 1. A minor deficiency impairs, but does not prevent, the capability to perform 2M repair processes or MTR diagnostic operations.
 - a) Examples of 2M/MTR minor deficiencies include:
 - 1) Missing a single size of extractor tip, eyelet, or ball mill.
 - 2) Missing MTR software revisions.
 - 3) Any missing or worn test system accessories, outdated software, or other item requiring replacement to support complete MTR Test Station configuration.
 - 4) Unauthorized software on MTR controller.
 - 5) Pressure/vacuum gage out of calibration.
 - c. If required, action items shall be identified by the 2M/MTR Inspector and a Plan of Action and Milestones (POA&M) developed by the repair site to address and remedy deficiencies.
 1. The repair site shall make monthly corrective action progress reports to the 2M/MTR Inspector.
 - d. General Comments
 1. List any comments and/or information; especially note outstanding performance by personnel or the activity.
 2. Provide any recommendations for the personnel or activity to improve.
19. Insert the overall results of the certification process in terms of (capable/incapable) in accordance with the criteria below:
 - a. Miniature Electronics Repair Capability
 1. The 2M/MTR Inspector shall identify a 2M/MTR repair site as Miniature Electronics Repair capable when an activity meets the requirements identified above and the following additional requirements:
 - a) A minimum of one repair technician, with at least six months remaining before transfer and at least six months remaining on their current Miniature Electronics Repair Technician certification, for each Miniature Electronics Repair workstation.
 - 1) For sites with both aviation and maritime work centers, technicians must be assigned to the work center where the Miniature Electronics Repair workstation resides, i.e. aviation technicians cannot be accounted for by the Combat Systems work center unless they are assigned to the Combat Systems work center.

- b) The 2M/MTR/FOTR Program approved equipment and tools required to perform Miniature Electronics Repairs as listed in 2M/MTR/FOTR Workstation Checklist (Appendix F).
 - c) A designated work area with adequate facilities, including ventilation, lighting, work area, and work surface as outlined in NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M Standard Maintenance Practices for 2M Electronics Assembly Repair, WP003 00, paragraph 03.4.4, 2M Facility Requirements.
 - d) A workbench as outlined in NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M Standard Maintenance Practices for 2M Electronics Assembly Repair, WP003 00, paragraph 03-4.5, 2M Workstation.
- b. Microminiature Electronics Repair Capability
- 1. The 2M/MTR Inspector shall identify a 2M/MTR repair site as Microminiature Electronics Repair capable when an activity meets the Miniature Electronics Repair Capability requirements and the following additional requirements:
 - a) A minimum of one repair technician, with at least six months remaining before transfer and at least six months remaining on their current Microminiature Electronics Repair Technician certification, for each Microminiature Electronics Repair workstation.
 - 1) For sites with both aviation and maritime work centers, technicians must be assigned to the work center where the Microminiature Electronics Repair workstation resides, i.e. aviation technicians cannot be accounted for by the Combat Systems work center unless they are assigned to the Combat Systems work center.
 - b) The 2M/MTR/FOTR Program approved equipment and tools required to perform Microminiature Electronics repairs as listed in 2M/MTR/FOTR Workstation Checklist (Appendix F).
 - c) A designated work area with adequate facilities, including ventilation, lighting, work area, and work surface as outlined in NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M Standard Maintenance Practices for 2M Electronics Assembly Repair, WP003 00, paragraph 03-4.4, 2M Facility Requirements.
 - d) A workbench as outlined in NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M Standard Maintenance Practices for 2M Electronics Assembly Repair, WP003 00, paragraph 03-4.5, 2M Workstation.
 - 2. A Microminiature Electronics Repair workstation may be certified at the Miniature Electronics Repair level if there is a shortage of Microminiature Electronics Repair Technicians, but there is a currently certified Miniature Electronics Repair Technician for the workstation.

- c. MTR Station Capability
 - 1. The 2M/MTR Inspector shall identify an 2M/MTR site capable of diagnostic testing when an activity meets following requirements:
 - a) A minimum of one certified MTR station operator, with at least six months remaining before transfer and at least six months remaining on their current MTR Technician certification, for each MTR workstation.
 - b) A minimum of support equipment and accessories required to perform diagnostic testing as listed in the 2M/MTR/FOTR Workstation Checklist (Appendix F).
 - 20. Conduct a departure briefing with a command representative (Commanding Officer, OIC, Supply Officer, EMO, CSMO, Department Head, and/or DLR Manager) and appropriate 2M/MTR personnel (2M/MTR Work Center Supervisor, 2M/MTR Technician, etc.).
 - a. All deficiencies and recommendations for improvement shall be discussed and documented.
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3-1.4 Recertification Requirements

- 1. A 2M/MTR Inspector shall certify all 2M/MTR repair sites every 18 months in accordance with the 2M/MTR Site Certification Process, paragraph 3-1.3.
 - a. A NAVSEA 2M/MTR Repair Site certification may be extended to 24 months by the cognizant 2M/MTR/FOTR Fleet Coordinator to accommodate deployment or other scheduling conflicts.
 - 1. During emergency operations, the 2M/MTR/FOTR Program Manager may approve additional extension(s) as necessary to continue 2M/MTR repair operations.
 - b. A NAVAIR 2M/MTR Repair Site certification may be extended to 24 months by the cognizant Aviation Maintenance Officer to accommodate deployment or other scheduling conflicts.
- 2. 2M/MTR repair sites shall be recertified whenever 2M/MTR workstations are relocated to ensure compliance with NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M Standard Maintenance Practices for 2M Electronics Assembly Repair, WP003 00, paragraph 03-4.4 2M Facility Requirements and paragraph 03-4.4 2M Workstation.
 - a. 2M/MTR workstations do not require recertification when an inoperable piece of equipment or an inoperable tool is replaced provided that the 2M/MTR workstation has not been moved.
- 3. 2M/MTR repair sites are identified as 2M repair and/or MTR capable when personnel, equipment and facility requirements are met.
 - a. Each repair site shall have the minimum number of certified technicians with at least six months remaining onboard (six months remaining to PRD) and at least six months remaining on their current 2M/MTR certification in order to be certified.

3-1.5 Recertification Reporting Requirements

1. Certification results are presented directly to the Commanding Officer or their designated representative.
2. The 2M/MTR Inspector shall document the recertification process by completing, and forwarding as appropriate, a 2M/MTR Repair Site Certification Letter (Appendix L).
 - a. NAVSEA 2M/MTR Repair Site Certification Letters are signed by the inspecting activity.
 1. NAVSEA 2M/MTR Repair Site Certification Letters are forwarded to the cognizant 2M/MTR/FOTR Fleet Coordinator for review prior to signature.
 - b. The Aviation Maintenance Management Officer shall sign NAVAIR 2M /MTR Repair Site Certification Letters conducted by the command designated 2500 Miniature /Microminiature (2M) Repair Program Manager.
 1. NAVAIR 2M/MTR Repair Site Certification Letters are forwarded to the commands Quality Assurance Officer for review prior to signature via the command's cognizant 2M/MTR/FOTR Program Monitor.
3. The 2M/MTR Inspector shall attach a copy of the signed 2M/MTR Repair Site Certification Letter to the 2M/MTR Repair Site record in the 2M/MTR/FOTR database.
4. The 2M/MTR Inspector shall issue a 2M/MTR Repair Site Certification Certificate.
5. The 2M/MTR Inspector shall enter site certification, technician, and workstation data into the 2M/MTR/FOTR database.

3-1.6 Decertification

1. 2M/MTR repair sites may be decertified during the certification process by failing to meet any of the criteria listed in paragraph 3-1.4.
 - a. NAVSEA 2M/MTR Inspectors shall provide notification of inability to recertify to the Commanding Officer and the 2M/MTR/FOTR Fleet Coordinator.
 1. The 2M/MTR/FOTR Fleet Coordinator shall provide notification of the inability of the NAVSEA command to recertify to the NAVSEA 2M/MTR/FOTR Program Manager.
 - b. NAVAIR 2M/MTR Inspectors shall provide notification of inability to recertify to the Commanding Officer and the AMMT Team Officer.

3-2 FOTR REPAIR SITES

1. Organizational level (O-level) and Intermediate level (I-level) FOTR work centers or repair sites shall be fully outfitted as specified in 2M/MTR/FOTR Workstation Checklist (Appendix F) including consumables.

3-2.1 Initial Certification Requirements

1. Authority to diagnose and repair fiber optic cables and components shall be granted only to those maintenance activities evaluated as being capable of providing quality fiber optic diagnostic testing and repair.
2. A FOTR Inspector shall certify activities performing organizational or intermediate level fiber optic diagnostic testing and repair on Navy procured fiber optic assemblies, regardless of physical location.
3. A FOTR Repair site shall be identified as capable of performing diagnostic testing and repair when personnel, equipment, and facility requirements are met in accordance with the FOTR Repair Site Certification Process, paragraph 3-2.3.

3-2.2 Initial Certification Reporting Requirements

1. Certification results are presented directly to the Commanding Officer, the Officer in Charge, or their designated representative.
2. The FOTR Inspector shall document the certification process by completing, and forwarding as appropriate, a FOTR Repair Site Certification Letter (Appendix M).
 - a. NAVSEA FOTR Repair Site Certification Letters are signed by the inspecting activity.
 1. NAVSEA FOTR Repair Site Certification Letters are forwarded to the cognizant 2M/MTR/FOTR Fleet Coordinator for review prior to signature.
3. The FOTR Inspector shall attach a copy of the signed FOTR Repair Site Certification Letter to the FOTR Repair Site record in the 2M/MTR/FOTR database.
4. The FOTR Inspector shall issue a FOTR Repair Site Certification Certificate.
5. The FOTR Inspector shall document the site certification data in the 2M/MTR/FOTR database.

3-2.3 FOTR Repair Site Certification Process

1. Identify activity (with 2MUIC) being certified.
2. List the date of the certification.
3. Identify the certifying activity.

4. Conduct an arrival briefing with command representative [Commanding Officer (CO), Officer in Charge (OIC), Electronics Material Officer (EMO), Combat Systems Maintenance Officer (CSMO), Maintenance Officer (MO) or Department Head, etc.], and appropriate FOTR personnel (2M/MTR/FOTR Work Center Supervisor, FOTR Repair Technician, etc.).
5. Identify all assigned FOTR personnel including:
 - a. Name
 - b. Rate, Rank
 - c. Planned rotation date (PRD)
 - d. Work center
 - e. Certification level
 - f. Certification expiration date
6. Inventory and verify performance of the applicable fiber optic test and repair equipment.
 - a. Document the serial number(s), quantities, and location(s) of the following equipment in the certification letter and the 2M/MTR/FOTR database, noting differences with the current configuration:
 1. Repair toolkits per AEL 670054591
 2. Test equipment per Test, Measurement, and Diagnostic Equipment Index quantities for SCAT 4310, SCAT 4319, SCAT 4952, SCAT 4954 and SCAT 4960.
 3. Measurement Quality Jumpers per AELs 670054592 and 670054594.
 - b. Inventory consumables, tools, and support equipment using the 2M/MTR/FOTR Workstation Checklist (Appendix F).
7. Discuss and evaluate proposed changes in tools, equipment, techniques, documentation and fiber optic training curriculum.
8. Verify a command 2M/MTR/FOTR instruction has been written and implemented.
9. Verify all support equipment used for fiber optic diagnostic testing and repair is supported by the current allowance list (APL).
 - a. Provide the technicians with information regarding approved changes to the following allowance lists, as applicable:
 1. Coordinated Shipboard Allowance List (COSAL)
 2. Coordinated Shore-Based Allowance List (COSBAL)
 3. Fiber Optic Toolkits AEL
 4. Fiber Optic Light Duty Toolkit APL

5. Fiber Optic Heavy Duty Toolkit APL
6. Fiber Optic Submarine Combo Toolkit APL
7. Multimode Measurement Quality Jumper AEL
8. Single Mode Measurement Quality Jumper AEL
9. Fiber Optic work center Parts APL
10. Verify that at least one paper or electronic copy of applicable fiber optic reference documents is available at or near the workstation. Multiple workstations in the same location do not require multiple copies of each document.
 - a. NAVSEA S9086-PF-STM-010/CH-408 Fiber Optic Cable Topology Operation, Maintenance, and Repair manual.MIL-STD-2042, Parts 1-6
 - b. Fiber Optic Job Performance Aids
 - c. NAVSEA TE000-AA-MAN-010/2M / NAVAIR SE-004-PQS-000, Certification Manual for Miniature/Microminiature Electronics Module Test and Repair/Fiber Optic Test and Repair (2M/MTR/FOTR) Program
11. Verify FOTR maintenance actions are documented in the Module Test and Repair Tracking System (MTRTS)
 - a. Measure the overall effectiveness of the Fiber Optic Test and Repair Program by comparing the command's requisition data to the MTRTS.
 - b. List FOTR screening, CASREPs averted, cost avoidance, and rate of effectiveness data.
12. Verify FOTR repairs are documented in accordance with OPNAVINST 4790.4 Chapters 6 and 7, via OPNAV 4790/2K Ship's Maintenance Action Form and in the Module Test and Repair Tracking System (MTRTS) using Codes 9R and 9X.
13. Verify the supply department personnel are fully aware of the policies and procedures contained in COMFLTFORCOMINST 4790.3 (JFMM), and NAVSUP Publication 485, Afloat Supply Procedures.
14. Summarize the certification:
 - a. Major Deficiencies
 1. A major deficiency prevents the capability to perform any specific task of a FOTR recertification and is cause for failure of the site certification.
 - a) Examples of FOTR major deficiencies include:
 - 1) Any combination of missing tools that would prevent completing the FOTR certification.
 - 2) Any combination of inoperable FOTR Test Equipment or missing Measurement Quality Jumpers that would prevent completing the FOTR certification.
 - 3) Missing replacement connectors that prevent completing the FOTR certification.
 - 4) Missing eye protection.

- 5) A recertifying technician is unable to properly operate the FOTR test equipment at their workstation
 - 6) The minimum number of technicians are not onboard or stationed at the facility.
- b. Minor Deficiencies
1. A minor deficiency impairs, but does not prevent, the capability to perform FOTR recertifications.
 - a) Examples of FOTR minor deficiencies include:
 - 1) Missing non-critical fiber optic tools
- c. If required, action items shall be identified by the FOTR Inspector and a Plan of Action and Milestones (POA&M) developed by the repair site to address and remedy deficiencies.
1. The repair site shall make monthly corrective action progress reports to the FOTR Inspector.
- d. General Comments
1. List any comments and/or information; especially note outstanding performance by personnel or the activity.
 2. Provide any recommendations for the personnel or activity to improve.
15. Insert the overall results of the certification process in terms of (capable/incapable) in accordance with the criteria below:
- a. For all categories below the following manning requirement is necessary to be considered capable:
 1. A minimum of 50% of the FLT MPS specified manning, with at least six months remaining before transfer and at least six months remaining on their current FOTR Technician Certification.
 - b. FOTR work center or repair site will be considered certified when the following conditions are met:
 - c. The FOTR program approved equipment and tools required to perform Single Ferrule connector repairs as listed in 2M/MTR/FOTR Workstation Checklist (Appendix F). Minimum quantities of Light Duty Connectors.
 - d. The FOTR program approved equipment and tools required to perform Multi-terminus connector repairs as listed in 2M/MTR/FOTR Workstation Checklist (Appendix F).
 1. Minimum quantities of replacement termini.

Approved models and quantities of the required General Purpose Electronic Test Equipment (GPETE) allowance for each ship as defined in the Test Measurement Diagnostic Equipment Index for SCAT codes 4310 (OTDR), 4319 (OLD), 4952 (SM OLTS), 4954 (MM OLTS) and/or 4960 (SM/MM OLTS)

The FOTR program approved Measurement Quality Jumpers as listed in the 2M/MTR/FOTR Workstation Checklist (Appendix F).

16. Conduct a departure briefing with a command representative (Commanding Officer, OIC, Supply Officer, EMO, CSMO, Department Head, and/or DLR Manager) and appropriate FOTR personnel (2M/MTR/FOTR Work Center Supervisor, FOTR Technician, etc.).
 - a. All deficiencies and recommendations for improvement shall be discussed and documented.
-

3-2.4 Recertification Requirements

1. A FOTR Inspector shall certify all FOTR Repair Sites every 18 months in accordance with the FOTR Repair Site Certification Process, paragraph 3-2.3.
 - a. A FOTR Repair Site certification is extendable to 24 months by the cognizant 2M/MTR/FOTR Fleet Coordinator to accommodate deployment or other scheduling conflicts.
 1. During emergency operations, the 2M/MTR/FOTR Program Manager may approve additional extension(s) as necessary to continue FOTR repair operations.
 2. FOTR Repair sites are identified as FOTR capable when personnel, equipment and facility requirements are met.
 - a. Each repair site shall have the minimum number of certified technicians with at least six months remaining onboard (six months remaining to PRD) and at least six months remaining on their current FOTR certification in order to be certified.
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3-2.5 Recertification Reporting Requirements

1. Certification results are presented directly to the Commanding Officer or their designated representative.
2. The FOTR Inspector shall document the recertification process by completing, and forwarding as appropriate, a FOTR Repair Site Certification Letter (Appendix M).
 - a. FOTR Repair Site Certification Letters are signed by the inspecting activity.
 1. FOTR Repair Site Certification Letters are forwarded to the cognizant 2M/MTR/FOTR Fleet Coordinator for review prior to signature.
3. The FOTR Inspector shall attach a copy of the signed FOTR Repair Site Certification Letter to the FOTR Repair Site record in the 2M/MTR/FOTR database.
4. The FOTR Inspector shall issue a FOTR Repair Site Certification Certificate.
5. The FOTR Inspector shall enter site certification, technician, and workstation data into the 2M/MTR/FOTR database.

3-2.6 Decertification

1. FOTR repair sites may be decertified during the certification process by failing to meet any of the criteria listed in paragraph 3-2.4.
 - a. FOTR Inspectors shall provide notification of inability to recertify to the Commanding Officer and the 2M/MTR/FOTR Fleet Coordinator.
 1. The 2M/MTR/FOTR Fleet Coordinator shall provide notification of the inability of the command to recertify to the NAVSEA 2M/MTR/FOTR Program Manager.

3-3 2M TRAINING SITES

3-3.1 Initial Certification Requirements

1. Certification of 2M training sites shall be required for any activity instructing any or all of the following 2M courses:
 - a. Miniature Electronics Repair, A-100-0072
 - b. Microminiature Electronics Repair, A-100-0073
 - c. 2M/MTR Technician Recertifier, A-100-0058
 - d. 2M/MTR Technician Recertifier Requalification, A-100-0144
 - e. 2M Instructor Initial Skills, A-100-0135
 - f. 2M Instructor Certification/Recertification, A-100-0136
2. Activities are certified by the 2M Certification Agent to instruct the aforementioned courses when they meet the personnel, equipment, and facility requirements in accordance with the 2M Training Site Certification Process, paragraph 3-3.3.
3. Verify a minimum of two currently certified 2M Instructors are assigned to the training site staff.

3-3.2 Initial Certification Reporting Requirements

1. The certifications results are submitted to the command representative (Commanding Officer, OIC, and/or Department Head).
2. The 2M Certification Agent shall document the certification process by completing a 2M Training Site Certification Letter (Appendix N) and forwarding the certification letter to Naval Sea Systems Command for signature. Copies of the 2M Training Site Certification Letter shall be provided to:
 - a. Center for Surface Combat Systems, Dahlgren
 - b. Course Curriculum Model Manager, Center for Surface Combat Systems Detachment West

- c. Naval Aviation Technical Training, Pensacola for Center for Naval Aviation Technical Training Unit Whidbey Island and Center for Naval Aviation Technical Training Detachment Atsugi
 3. The 2M Certification Agent shall attach a copy of the signed 2M Training Site Certification Letter to the 2M Training Site record in the 2M/MTR/FOTR database.
 4. The 2M Certification Agent shall issue a 2M Training Site Certification Certificate to the 2M Training Site.
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3-3.3 2M Training Site Certification Process

1. Identify activity (with 2MUIC) being certified.
2. List the date of the certification.
3. Identify certifying activity.
4. Conduct an arrival briefing with a command representative (Commanding Officer, OIC, Department Head, and/or Division Director) and/or appropriate 2M personnel (2M Group/Course Supervisor and/or 2M Instructors).
5. Identify all assigned 2M Instructor personnel including:
 - a. Name
 - b. Rate, Rank
 - c. Planned Rotation Date (PRD)
 - d. Certification level
 - e. Certification expiration date
6. Inventory and verify performance of the applicable 2M equipment.
 - a. Document the serial number(s), quantities, and location(s) of the following equipment in the 2M/MTR/FOTR database, noting differences with the current configuration:
 1. 2M Electronic Rework Power Unit: PRC-2000
 2. Auxiliary Equipment: microscope, fiber optic lamp, ESD constant monitoring station, preheater, video camera, monitor, etc.
 - b. Inventory consumables, tools, and support equipment in accordance with the 2M/MTR/FOTR Workstation Checklist (Appendix F).
 - c. Verify applicable 2M equipment is operational in accordance with the 2M/MTR Equipment Verification Process (Appendix I).
7. Discuss and evaluate proposed changes in tools, equipment, techniques, and 2M training curriculum.

8. Verify training site has an ample supply of the following items:
 - a. Mini 2M Training Kits, A-100-0072T
 - b. Micro 2M Training Kits, A-100-0073T
 - c. Conformally Coated CCAs
 - d. Ceramic CCAs
 - e. List discrepancies and corrective actions.
 - f. Evaluate the site to ensure compliance with NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M Standard Maintenance Practices for 2M Electronics Assembly Repair, WP003 00, paragraph 03-4.4, 2M Facility Requirements and obtain a copy of the current Industrial Hygiene Survey.
9. Evaluate the facility workbenches to ensure compliance with NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M Standard Maintenance Practices for 2M Electronics Assembly Repair, WP003 00, paragraph 03-4.5, 2M Workstation.
10. Verify access to the 2M/MTR/FOTR SharePoint site for 2M documents.
11. Verify appropriate instructional materials are current and available:
 - a. Administrator's Guide
 - b. Lesson Plan
 - c. Performance Tests
 - d. Trainee Guide
 - e. Audiovisual aids
 - f. For the following 2M courses, as applicable:
 1. Miniature Electronics Repair, A-100-0072
 2. Microminiature Electronics Repair, A-100-0073
 3. 2M Instructor Initial Skills, A-100-0135
 4. 2M Instructor Certification/Recertification, A-100-0136
 5. 2M/MTR Technician Recertifier Course, A-100-0058
 6. 2M/MTR Technician Recertifier Requalification Course A-100-0144
 - g. List deficiencies and corrective action.
12. Review the activity's training records.
 - a. This shall include a review of:
 1. Instructor-in-training records

2. Courses conducted
 3. Number of training quotas available since last training site certification
 4. Number of training quotas utilized since last training site certification
 5. The number of students certified, by skill level, since last training site certification
13. Verify each classroom meets applicable capability in accordance with the following criteria:
- a. Miniature Electronics Repair Training Capability
 1. The 2M Certification Agent shall identify a 2M training site as Miniature Electronics Repair training capable when the activity meets all the requirements cited above and the following additional requirements:
 - a) Each classroom shall have a minimum of one qualified 2M Instructor for every four students. One 2M Instructor per classroom may be enrolled in the 2M Instructor Pipeline course.
 - b) Each classroom shall have one complete set of equipment and tools per student and one additional set for 2M instructor preparation and demonstrations, as prescribed by the Miniature Electronics Repair Course, A-100-0072, and using the 2M/MTR/FOTR Workstation Checklist (Appendix F)
 - c) A minimum of one paper copy of NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M, Standard Maintenance Practices, per student
 - d) One paper or electronic copy of NAVSEA S9665-CY-OMP-010/PRC-2000U / NAVAIR 17-15-99, PRC-2000 Technical Manual, per classroom
 - e) One operational Miniature/Microminiature Display Trainer (MMDT) consisting of camera, monitor, and microscope per classroom
 - b. Microminiature Electronics Repair Training Capability
 1. The 2M Certification Agent shall identify a 2M training site as Microminiature Electronics Repair training capable when the activity meets all the Miniature Electronics Repair requirements cited above and the following additional requirements:
 - a) A minimum of one complete set of equipment and tools per student, as prescribed by the Microminiature Electronics Repair Course, A-100-0073, and using the 2M/MTR/FOTR Workstation Checklist (Appendix F)
 - b) One complete set of equipment and tools per classroom for 2M instructor preparation and demonstrations, as prescribed by the Microminiature Electronics Repair Course, A-100-0073, and using the 2M/MTR/FOTR Workstation Checklist (Appendix F)
14. The Certification Agent shall verify the following certification requirements for each 2M Instructor:
- a. Current Microminiature Electronics Repair certification.
 - b. Primary or secondary instructor in one Miniature Electronics Repair Course and one Microminiature Electronics Repair Course in the preceding 12 months.

- c. Two satisfactory technical evaluations in the preceding 12 months (one 2M lecture and one 2M demonstration).
- d. Completion of 2M Instructor Pipeline course, A-100-0074 or 2M Instructor Certification/Recertification course, A-100-0136 for previously qualified 2M Instructors.

15. 2M Instructor Evaluations

- a. Evaluate each 2M Instructor in one lecture and one demonstration to ensure technical and process fidelity in accordance with NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M Standard Maintenance Practices for 2M Electronics Assembly Repair.
 - 1. The 2M Certification Agent shall review, advise, and assist 2M Instructor personnel in matters concerning 2M training, organization, and administration, as applicable.

16. Summarize the certification:

a. Major Deficiencies

- 1. A major deficiency prevents the capability to instruct, demonstrate or perform any specific task of a course and is cause for failure of the site certification.
 - a) Examples of major 2M deficiencies include:
 - 1) Any discrepancy that impacts personnel or equipment safety.
 - 2) Insufficient number of Instructors to maintain the proper instructor to student ratios required by the number of training site classrooms.
 - 3) Missing ESD control capabilities.
 - 4) Any combination of missing tools, insufficient quantities of consumables, or inoperable equipment that would prevent instructing and/or completing a course task.
 - 5) Training site failing to meet the minimum standards of NAVAIR 01-1A-23 / NAVSEA SE004- AK-TRS-010/2M Standard Maintenance Practices for 2M Electronics Assembly Repair, WP003 00, Facility Requirements.
 - 6) Failure of Equipment Verification Process (Periodic Maintenance Requirements).

b. Minor Deficiencies

- 1. A minor deficiency impairs, but does not prevent the capability to instruct, demonstrate or perform a specific task of a course and is not cause for failure of the site certification.
 - a) Examples of minor 2M deficiencies include:
 - 1) Missing a single extractor tip, eyelet, dental tool or ball mill.
- c. If required, action items shall be identified by the Certification Agent and a Plan of Action and Milestones (POA&M) developed by the training site to address and remedy deficiencies.
 - 1. The training site shall make monthly corrective action progress reports to the 2M Certification Agent.

- d. General Comments
 - 1. List any comments and/or information; especially note outstanding performance by personnel or the activity.
 - 2. Provide any recommendations for the personnel or activity to improve.
 - 17. Insert the overall results of the certification process in terms of [capable/incapable] of providing instruction leading to the accomplishment of the following training, as applicable:
 - 1. Miniature Electronics Repair
 - 2. Microminiature Electronics Repair
 - 3. 2M/MTR Technician Recertifier
 - 4. 2M Instructor
 - 18. Conduct a departure briefing with a command representative (Commanding Officer, OIC, Department Head, and/or Division Director) and appropriate 2M personnel (2M Group/Course Supervisor and/or 2M Instructors).
 - a. All deficiencies, recommendations for improvement, and commitments shall be discussed and documented.
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3-3.4 Recertification Requirements

- 1. The 2M Certification Agent shall certify all 2M training sites every 12 months in accordance with the 2M Training Site Certification Process, paragraph 3-3.3.
 - a. The NAVSEA 2M/MTR/FOTR Program Manager may extend this interval up to 18 months to facilitate scheduling
- 2. Verify the training site has provided a representative to a minimum of one mandatory semi-annual Instructor/Inspector meeting during the previous 12 months.
- 3. Activities are certified by the 2M Certification Agent as qualified to instruct the following courses when they meet personnel, equipment, and facility requirements, as applicable:
 - a. Miniature Electronics Repair, A-100-0072
 - b. Microminiature Electronics Repair, A-100-0073
 - c. 2M/MTR Technician Recertifier, A-100-0058
 - d. 2M/MTR Technician Recertifier Requalification, A-100-0144
 - e. 2M Instructor Initial Skills, A-100-0135
 - f. 2M Instructor Certification/Recertification, A-100-0136

3-3.5 Recertification Reporting Requirements

1. Certifications results are presented directly to the Commanding Officer, the Officer in Charge or their designated representative.
2. The 2M Certification Agent shall document the certification process by completing a 2M Training Site Certification Letter (Appendix N) and forwarding the certification letter to the NAVSEA 2M/MTR/FOTR Program Manager for signature. Copies of the 2M Training Site Certification Letter shall be provided to:
 - a. Center for Surface Combat Systems, Dahlgren
 - b. Course Curriculum Model Manager, Center for Surface Combat Systems Detachment West
 - c. Naval Aviation Technical Training, Pensacola for Center for Naval Aviation Technical Training Unit Whidbey Island and Center for Naval Aviation Technical Training Detachment Atsugi
3. The 2M Certification Agent shall attach a copy of the signed 2M Training Site Certification Letter to the 2M Training Site record in the 2M/MTR/FOTR database.
4. The 2M Certification Agent shall issue a 2M Training Site Certification Certificate to the 2M Training Site.
5. The 2M Certification Agent shall enter 2M instructor and workstation data into the 2M/MTR/FOTR database.

3-3.6 Decertification

1. 2M training sites may be decertified during the certification process by failing to meet any of the criteria listed in paragraph 3-3.4.
2. The 2M Certification Agent shall provide notification of inability to recertify to the Commanding Officer and the NAVSEA 2M/MTR/FOTR Program Manager.

3-3.7 Remote 2M Training

1. Organizations desiring to conduct remote 2M training at locations other than certified 2M Training Sites shall obtain approval from the 2M Certification Agent prior to conducting the remote 2M training.

3-4 MTR TRAINING SITES

3-4.1 Initial Certification Requirements

1. Certification of MTR training sites shall be required for any activity teaching the Module Test and Repair Equipment Operator Course, A-100-0076.

2. Activities are certified by the MTR Certification Agent to instruct the Module Test and Repair Equipment Operator Course, A-100-0076 when they meet the personnel, equipment, and facility requirements in accordance with the MTR Training Site Certification Process, paragraph 3-3.3.

3-4.2 Initial Certification Reporting Requirements

1. The certifications results are submitted to the command representative (Commanding Officer, OIC, and/or Department Head).
2. The MTR Certification Agent shall document the certification process by completing an MTR Training Site Certification Letter (Appendix O) and forwarding the certification letter to Naval Sea Systems Command for signature. Copies of the MTR Training Site Certification Letter shall be provided to:
 - a. Center for Surface Combat Systems, Dahlgren
 - b. Course Curriculum Model Manager, Center for Surface Combat Systems Detachment West
 - c. Naval Aviation Technical Training, Pensacola for Center for Naval Aviation Technical Training Unit Whidbey Island and Center for Naval Aviation Technical Training Detachment Atsugi
3. The MTR Certification Agent shall attach a copy of the signed MTR Training Site Certification Letter to the MTR Training Site record in the 2M/MTR/FOTR database.
4. The MTR Certification Agent shall issue an MTR Training Site Certification Certificate.

3-4.3 MTR Training Site Certification Process

1. Identify activity (with 2M UIC) being certified.
2. List the date of the certification.
3. Identify certifying activity.
4. Conduct an arrival briefing with a command representative (Commanding Officer, OIC, Department Head, and/or Division Director) and/or appropriate MTR personnel (MTR Group/Course Supervisor and/or MTR Instructors).
5. Identify all assigned MTR Instructor personnel including:
 - a. Name
 - b. Rate, Rank
 - c. Planned Rotation Date (PRD)
 - d. Certification level
 - e. Certification expiration date

6. Inventory and verify performance of the applicable MTR equipment.
 - a. Document the serial number(s), quantities, and location(s) of the following equipment in the 2M/MTR/FOTR database, noting differences with the current configuration:
 1. MTR Test Station Controller, MTR Support Equipment, ESD constant monitoring station, Uninterruptible Power Supply, and associated accessories
 - b. Inventory consumables, tools, and support equipment in accordance with the 2M/MTR/FOTR Workstation Checklist (Appendix F).
 - c. Verify applicable MTR equipment is operational in accordance with the 2M/MTR Equipment Verification Process (Appendix I).
7. Discuss and evaluate proposed changes in tools, equipment, techniques, and MTR training curriculum.
 - a. Verify training site has an ample supply of the following MTR training material:
 1. MTR Training CCAs
 - a) 07-7762 Huntron Demo Board
 - b) 06-3056 Huntron Troubleshooting CCA
 2. Current MTR Test Routines and software
 - b. List discrepancies and corrective actions.
 - c. Evaluate the site to ensure compliance with NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M Standard Maintenance Practices for 2M Electronics Assembly Repair, WP003 00, paragraph 03-4.4, 2M Facility Requirements and obtain a copy of the current Industrial Hygiene Survey.
8. Evaluate the facility workbenches to ensure compliance with NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M Standard Maintenance Practices for 2M Electronics Assembly Repair, WP 003 00, paragraph 03-4.5, 2M Workstation.
9. Verify access to the 2M/MTR/FOTR SharePoint site for MTR documents.
10. Verify appropriate instructional materials are current and available for the Module Test and Repair Equipment Operator, A-100-0076 Course:
 - a. Administrator's Guide
 - b. Lesson Plan
 - c. Performance Tests
 - d. Trainee Guide
 - e. Audiovisual aids
 - f. List deficiencies and corrective action.

11. Review the activity's training records.
 - a. This shall include a review of:
 1. Instructor-in-training records
 2. Courses conducted
 3. Number of training quotas available since last training site certification
 4. Number of training quotas utilized since last training site certification
 5. The number of students certified, by skill level, since last training site certification
12. Verify each classroom meets applicable MTR Training capability in accordance with the following criteria:
 1. The MTR Certification Agent shall identify an MTR training site as MTR training capable when the activity meets all the requirements cited above and the following additional requirements:
 - a) A minimum of six to one student/instructor ratio is required utilizing a minimum of one certified MTR Instructor per classroom
 - b) A minimum of one complete set of test equipment, tools and accessories per student and one additional set per classroom for MTR instructor preparation, as prescribed by the MTR Equipment Operator Course, A-100-0076 using the 2M/MTR/FOTR Workstation Checklist (Appendix F)
 - c) A minimum of one paper copy of NAVSEA ST900-HN-GPT-010 Department of Defense Module Test and Repair Users Manual per student.
13. The MTR Certification Agent shall verify the following certification requirements for each MTR Instructor:
 - a. Current MTR certification.
 - b. Primary or secondary instructor in one Module Test and Repair Equipment Operator Course in the preceding 12 months.
 - c. Two satisfactory technical evaluations in the preceding 12 months
 - d. Completion of the MTR Instructor Qualification Process.
14. MTR Instructor Evaluations
 - a. Evaluate MTR Instructors to ensure technical and process fidelity in accordance with NAVSEA ST900-HN-GPT-010 Department of Defense Module Test and Repair Users Manual.
 1. The MTR Certification Agent shall review, advise, and assist MTR Instructor personnel in matters concerning MTR training, organization, and administration, as applicable.

15. Summarize the certification:

a. Major Deficiencies

1. A major deficiency prevents the capability to instruct, demonstrate or perform any specific task of a course and is cause for failure of the site certification.
 - a) Examples of MTR major deficiencies include:
 - 1) Any discrepancy that impacts personnel or equipment safety.
 - 2) Insufficient number of Instructors to maintain the proper instructor to student ratios required by the number of training site classrooms.
 - 3) Missing ESD control capabilities.
 - 4) Any combination of missing tools, insufficient quantities of consumables, or inoperable equipment that would prevent instructing and/or completing a course task.
 - 5) Training site failing to meet the minimum standards of NAVAIR 01-1A-23 / NAVSEA SE004- AK-TRS-010/2M Standard Maintenance Practices for 2M Electronics Assembly Repair, WP003 00, Facility Requirements.
 - 6) Failure of Equipment Verification Process (Periodic Maintenance Requirements).

b. Minor Deficiencies

1. A minor deficiency impairs, but does not prevent the capability to instruct, demonstrate or perform a specific task of a course and is not cause for failure of the site certification.
 - a) Examples of MTR minor deficiencies include:
 - 1) Missing current MTR software revision.
 - 2) Any missing or worn test system accessories, outdated software, or other item requiring replacement to support complete MTR Test Station configuration.

c. If required, action items shall be identified by the Certification Agent and a Plan of Action and Milestones (POA&M) developed by the training site to address and remedy deficiencies.

1. The training site shall make monthly corrective action progress reports to the Certification Agent.

d. General Comments

1. List any comments and/or information; especially note outstanding performance by personnel or the activity.
2. Provide any recommendations for the personnel or activity to improve.
3. Insert the overall results of the certification process in terms of [capable/incapable] of providing instruction leading to the accomplishment of Module Test and Repair Operator training.

16. Conduct a departure briefing with a command representative (Commanding Officer, OIC, Department Head, and/or Division Director) and appropriate MTR personnel (MTR Group/Course Supervisor and/or MTR Instructors).
 - a. All deficiencies, recommendations for improvement, and commitments shall be discussed and documented.

3-4.4 Recertification Requirements

4. The MTR Certification Agent shall certify all MTR training sites every 12 months in accordance with the MTR Training Site Certification Process, paragraph 3-3.3.
 - a. The NAVSEA 2M/MTR/FOTR Program Manager may extend this interval up to 18 months to facilitate scheduling
5. Activities are certified by the MTR Certification Agent as qualified to instruct the Module Test and Repair Equipment Operator, A-100-0076 course when they meet personnel, equipment, and facility requirements.

3-4.5 Recertification Reporting Requirements

6. Certifications results are presented directly to the Commanding Officer, the Officer in Charge or their designated representative.
7. The MTR Certification Agent shall document the certification process by completing an MTR Training Site Certification Letter (Appendix O) and forwarding the certification letter to the NAVSEA 2M/MTR/FOTR Program Manager for signature. Copies of the MTR Training Site Certification Letter shall be provided to:
 - a. Center for Surface Combat Systems, Dahlgren
 - b. Course Curriculum Model Manager, Center for Surface Combat Systems Detachment West
 - c. Naval Aviation Technical Training, Pensacola for Center for Naval Aviation Technical Training Unit Whidbey Island and Center for Naval Aviation Technical Training Detachment Atsugi
8. The MTR Certification Agent shall attach a copy of the signed MTR Training Site Certification Letter to the MTR Training Site record in the 2M/MTR/FOTR database.
9. The MTR Certification Agent shall issue an MTR Training Site Certification Certificate to the MTR Training Site.
10. The MTR Certification Agent shall enter MTR instructor and workstation data into the 2M/MTR/FOTR database.

3-4.6 Decertification

1. MTR training sites may be decertified during the certification process by failing to meet any of the criteria listed in paragraph 3-3.4.
2. The MTR Certification Agent shall provide notification of inability to recertify to the Commanding Officer and the NAVSEA 2M/MTR/FOTR Program Manager.

3-5 FOTR TRAINING SITES

3-5.1 Initial Certification Requirements

1. Fiber optic training is accessed through fleet schoolhouse resources or in some cases through an external Certified Shipboard Fiber Optic Training Organization.
 2. All certification requirements, certification process, recertification requirements, and decertification for external Certified Shipboard Fiber Optic Training Organizations are defined in NAVSEA DWG 8477552.
 3. Certification of Fiber Optic Training Sites shall be required for any activity instructing the Fiber Optic Maintenance Technician Course, A-670-0063.
 4. Activities are certified by the FOTR Certification Agent to instruct A-670-0063 when they meet the personnel, equipment, and facility requirements in accordance with the FOTR Training Site Certification Process, paragraph 3-5.3.
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3-5.2 Initial Certification Reporting Requirements

1. For A-670-0063, the certifications results are submitted to the command representative (Commanding Officer, OIC, and/or Department Head).
2. For A-670-0063, the FOTR Certification Agent shall document the certification process by completing a FOTR Training Site Certification Letter (Appendix P) and forwarding the certification letter to Naval Sea Systems Command for signature. Copies of the FOTR Training Site Certification Letter shall be provided to:
 - a. SCSTC Dahlgren
 - b. Course Curriculum Model Manager
3. For A-670-0063, The FOTR Certification Agent shall attach a copy of the signed FOTR Training Site Certification Letter to the FOTR Training Site record in the 2M/MTR/FOTR database.
4. The FOTR Certification Agent shall issue a FOTR Training Site Certification Certificate.

5. For external training organizations, The FOTR Certification Agent shall maintain a list of Certified Fiber Optic Trainers on the NSWC Dahlgren Fiber Optic Website <https://www.navsea.navy.mil/Home/Warfare-Centers/NSWC-Dahlgren/What-We-Do/Navy-Shipboard-Fiberoptics/> and shall attached a copy of the organization's approval letter to the FOTR Training Site record in the 2M/MTR/FOTR database.

3-5.3 FOTR Training Site Certification Process (A-670-0063)

1. Identify activity (with 2M UIC) being certified.
2. List the date of the certification.
3. Identify certifying activity.
4. Conduct an arrival briefing with a command representative (Commanding Officer, OIC, Department Head, and/or Division Director) and/or appropriate FOTR personnel (FOTR Group/Course Supervisor and/or FOTR Instructors).
5. Identify all assigned FOTR Instructor personnel including:
 - a. Name
 - b. Rate, Rank
 - c. Planned Rotation Date (PRD)
 - d. Certification level
 - e. Certification expiration date
6. Inventory and verify performance of the applicable FOTR equipment.
 - a. Document the serial number(s), quantities, and location(s) of the following equipment in the 2M/MTR/FOTR database:
 1. Fiber optic test equipment: Optical Time Domain Reflectometer (SCAT 4310), Single Mode Optical Loss Test Set (SCAT 4952), Multimode Optical Loss Test Set (SCAT 4954).
 2. There should be enough test equipment and MQJs to allow two separate teams of techs to troubleshoot and test their cables at the same time.
 3. Fusion Splicer
 - b. Inventory consumables and tools, in accordance with the draft N96-NTSP-S-30-XXXX, Navy Training System Plan, Fiber Optic Maintenance.
 1. Techs should have their own separate set of the most commonly used tools for the tasking assigned in class under instruction.

2. There should be enough test equipment and MQJs to allow two separate teams of techs to troubleshoot and test their cables at the same time.
- c. Inventory Measurement Quality Jumpers in accordance with Appendix F
 1. There should be enough MQJs to allow two separate teams of techs to troubleshoot and test their cables at the same time
17. Discuss and evaluate proposed changes in tools, equipment, techniques, and fiber optic training curriculum.
18. Verify training site has an ample supply of the following items:
 - a. Fiber optic training material and consumables
 1. M83522/16 ST connectors
 2. Approved COTS ST Connectors
 3. Approved COTS SC Connectors
 4. Approved COTS LC Connectors
 5. HAZMAT:
 - a) F112 epoxy
 - b) Isopropyl alcohol
 6. M85045/16 OFCC
 7. M85045/17 or M85045/18 Fiber Optic Cable
 8. M29504/14 or M29504/15 Termini
 9. M28876 Connectors
 10. Fusion splice sleeves
 - b. List discrepancies and corrective actions.
19. Verify access to the NSWC Dahlgren Fiber Optic Website and the 2M/MTR/FOTR SharePoint site.
20. Verify appropriate instructional materials are current and available:
 - a. Administrator's Guide
 - b. Lesson Plan
 - c. Performance Tests
 - d. Trainee Guide
 - e. Audiovisual aids
 - f. List deficiencies and corrective action.

21. Review the activity's training records.
 - a. This shall include a review of:
 1. Instructor-in-training records
 2. Courses conducted
 3. Number of training quotas available since last training site certification
 4. Number of training quotas utilized since last training site certification
 5. The number of students certified since last training site certification
22. Verify each classroom meets applicable capability in accordance with the following criteria:
 - a. Fiber Optic Test and Repair Training Capability
 1. The FOTR Certification Agent shall identify a FOTR Training Site as fiber optic training capable when the activity meets all the requirements cited above and the following additional requirements:
 - a) Each classroom shall have a minimum of one qualified FOTR Instructor for every eight students.
 - b) Each classroom shall have one complete set of tools per student and one additional set for FOTR Instructor preparation and demonstrations, as prescribed by the draft N96-NTSP-S-30-XXXX.
 - c) Each classroom shall have GPETE approved fiber optic test equipment per the requirements of draft N96-NTSP-S-30-XXXX. There should be enough for two separate stations for troubleshooting and testing.
 - d) Reference documents as specified in draft N96-NTSP-S-30-XXXX including one paper or electronic copy of the current revision of MIL-STD-2042 Parts 1-6 per student.
23. The FOTR Certification Agent shall verify the FOTR Instructors have met the FOTR Instructor initial certification requirements, paragraph 2-11.2
24. Evaluate each FOTR Instructor in one lecture and one demonstration to ensure technical and process fidelity in accordance with MIL-STD-2042, Fiber Optic Cable Topology Installation Standard Methods for Surface Ships and Submarines, and S9086-PF-STM-010/CH-408, Fiber Optic Cable Topology Operation, Maintenance, and Repair manual.
 - a. The FOTR Certification Agent shall review, advise, and assist FOTR Instructor personnel in matters concerning Fiber Optic training, organization, and administration, as applicable.
25. Summarize the certification:
 - a. Major Deficiencies

1. A major deficiency prevents the capability to instruct, demonstrate or perform any specific task of a course and is cause for failure of the site certification. Examples of FOTR major deficiencies include:
 - a) Any discrepancy that impacts personnel or equipment safety
 - b) Insufficient number of Instructors to maintain the proper instructor to student ratios required by the number of training site classrooms
 - c) Any combination of missing tools, insufficient quantities of consumables, or inoperable equipment that would prevent instructing and/or completing a course task
- b. d) Training site failing to meet the minimum standards of draft N96-NTSP-S-30-XXXX, Navy System Training Plan, Fiber Optic Maintenance. Minor Deficiencies
 1. A minor deficiency impairs, but does not prevent the capability to instruct, demonstrate or perform a specific task of a course and is not cause for failure of the site certification. Examples of FOTR minor deficiencies include:
 - a) Missing non-critical tooling or test equipment piece parts
 - b) Out of date or inaccurate information within the training curriculum or improperly communicated information by the instructor.
 - c. If required, action items shall be identified by the Certification Agent and a Plan of Action and Milestones (POA&M) developed by the training site to address and remedy deficiencies.
 1. The training site shall make monthly corrective action progress reports to the Certification Agent.
 2. Failure to correct deficiencies could be grounds for de-certification.
 - d. General Comments
 1. List any comments and/or information; especially note outstanding performance by personnel or the activity.
 2. Provide any recommendations for the personnel or activity to improve.
26. Insert the overall results of the certification process in terms of [capable/incapable] of providing instruction leading to the accomplishment of the Fiber Optic Maintenance Course, A-670-0063.
27. Conduct a departure briefing with a command representative (Commanding Officer, OIC, Department Head, and/or Division Director) and appropriate FOTR personnel (FOTR Group/Course Supervisor and/or FOTR Instructors).
 - a. All deficiencies, recommendations for improvement, and commitments shall be discussed and documented.

3-5.4 Recertification Requirements

1. The FOTR Certification Agent shall certify all FOTR training sites providing A-670-0063 instruction every 12 months in accordance with the FOTR Training Site Certification Process, paragraph 3-5.3.
 - a. The NAVSEA 2M/MTR/FOTR Program Manager may extend this interval up to 18 months to facilitate scheduling

3-5.5 Recertification Reporting Requirements

1. Certifications results for activities providing A-670-0063 instruction are presented directly to the Commanding Officer, the Officer in Charge or their designated representative.
2. The FOTR Certification Agent shall document the certification process by completing a FOTR Training Site Certification Letter (Appendix P) and forwarding the certification letter to the NAVSEA 2M Program Manager for signature. Copies of the FOTR Training Site Certification Letter shall be provided to:
 - a. Surface Combat Systems Training Center (SCSTC), Dahlgren
 - b. Course Curriculum Model Manager, SCSTC San Diego
3. The FOTR Certification Agent shall attach a copy of the signed FOTR Training Site Certification Letter to the FOTR Training Site record in the 2M/MTR/FOTR database.
4. The FOTR Certification Agent shall issue a FOTR Training Site Certification Certificate.
5. The FOTR Certification Agent shall enter FOTR Instructor data into the 2M/MTR/FOTR database.

3-5.6 Decertification

1. Fiber Optic Training Sites may be decertified during the certification process by failing to meet any of the criteria listed in paragraph 3-5.3 or by not correcting deficiencies found in previous certification assessments.
2. The FOTR Certification Agent shall provide notification of inability to recertify to the Commanding Officer and the NAVSEA 2M/MTR/FOTR Program Manager.

3-6 2M/MTR/FOTR INSPECTOR SITES

1. NAVSEA 2M/MTR/FOTR inspector sites are provided equipment by NAVSEA for the purpose of technician recertification and remediation.
 - a. NAVSEA 2M/MTR/FOTR inspector sites and 2M/MTR/FOTR repair sites shall be separately maintained.

3-6.1 Initial Certification Requirements

1. 2M/MTR/FOTR inspector Site certification is required for any activity performing 2M/MTR/FOTR repair site certification and recertification of 2M/MTR/FOTR technicians.
2. The 2M/MTR/FOTR Fleet Coordinator certifies the 2M/MTR/FOTR Inspector Sites under their cognizance.
 - a. The Certification Agents certify the 2M/MTR/FOTR Fleet Coordinator's 2M/MTR/FOTR Inspector site.

3-6.2 Initial Certification Reporting Requirements

1. The 2M/MTR/FOTR Fleet Coordinator and 2M Certification Agent (for Fleet Coordinator sites) shall document the certification process by completing a 2M/MTR/FOTR Inspector Site Certification Letter (Appendix Q).
 - a. 2M/MTR/FOTR Fleet Coordinators forward the 2M/MTR/FOTR Inspector Site Certification Letter to their Regional Maintenance Center for signature.
 - b. Certification Agents forward the 2M/MTR/FOTR Inspector Site Certification Letter to Naval Sea Systems Command for signature.
2. The 2M/MTR/FOTR Fleet Coordinator or Certification Agent shall attach a copy of the signed 2M/MTR/FOTR Inspector Site Certification Letter to the 2M/MTR/FOTR Inspector Site record in the 2M/MTR/FOTR database.
3. The 2M/MTR/FOTR Fleet Coordinator or Certification Agent shall issue a 2M/MTR/FOTR Inspector Site Certification Certificate.

3-6.3 2M/MTR/FOTR Inspector Site Certification Process

1. Identify activity (with 2M UIC) being certified.
2. List the date of the certification.
3. Identify certifying activity.
4. Conduct an arrival briefing with a command representative (Commanding Officer, OIC, Department Head, and/or Division Director) and appropriate 2M/MTR/FOTR personnel (2M/MTR Inspector and/or 2M/MTR/FOTR Fleet Coordinator).
5. Identify all assigned 2M/MTR/FOTR Inspectors and/or 2M/MTR/FOTR Fleet Coordinator including:
 - a. Name
 - b. Rate, Rank

- c. Planned rotation date (PRD)
- d. Certification level
- e. Certification expiration date
 - 1. A command manpower review and NEC realignment is recommended to account for those 2M/MTR/FOTR Inspectors no longer assigned NEC 772B responsibilities due to changing job position or advancement.
- 6. Inventory and verify performance of the applicable 2M/MTR/FOTR equipment.
 - a. Document the serial number(s), quantities, and location(s) of the following equipment in the Certification Letter and the 2M/MTR/FOTR database, noting differences with the current configuration:
 - 1. 2M Electronic Rework Power Unit: PRC-2000, MBT-250, ST-25, etc.
 - 2. Auxiliary Equipment: microscope, fiber optic lamp, ESD constant monitoring station, preheater, etc.
 - 3. MTR Equipment: MTR Test Station Controller, MTR Test Equipment, ESD constant monitoring station, Uninterruptible Power Supply, and associated accessories
 - b. Inventory consumables, tools, and support equipment in accordance with the 2M/MTR/FOTR Workstation Checklist (Appendix F).
 - c. Verify applicable 2M/MTR/FOTR equipment is operational in accordance with the 2M/MTR/FOTR Equipment Verification Process (Appendix I).
- 7. Discuss and evaluate proposed changes in tools, equipment, techniques, and 2M and MTR training curriculum.
- 8. Verify Inspector site has an ample supply of the following materials.
 - a. 2M Materials
 - 1. Miniature Recertification Kits (A-100-0072R)
 - 2. Microminiature Recertification Kits (A-100-0073R)
 - 3. Conformally Coated CCAs
 - 4. Ceramic CCAs
 - b. MTR Materials
 - 1. MTR recertification CCAs
 - 2. Current MTR Test Routines and MTR software
 - c. List deficiencies and corrective actions.
- 9. Evaluate the site to ensure compliance with NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M Standard Maintenance Practices for 2M Electronics Assembly Repair, WP003 00, paragraph 03-4.4, 2M Facility Requirements.

10. Evaluate the workbench(es) to ensure compliance with NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M Standard Maintenance Practices for 2M Electronic Assembly Repair, WP003 00, paragraph 03-4., 2M Workstation.
11. Verify the site has access to the 2M/MTR/FOTR SharePoint site for 2M/MTR/FOTR documents.
12. Verify 2M/MTR/FOTR Inspectors are reporting completion of 2M/MTR/FOTR Repair Site certifications and 2M/MTR/FOTR personnel recertifications in the 2M/MTR/FOTR database.
13. Verify a 2M/MTR/FOTR Inspector Certification Letter is issued for each 2M/MTR/FOTR Inspector.
14. Review and document the certification status of the 2M/MTR/FOTR Sites under the cognizance of the 2M/MTR/FOTR Inspector or 2M/MTR/FOTR Fleet Coordinator.
15. The 2M/MTR/FOTR Fleet Coordinator shall accompany and observe the 2M/MTR/FOTR Inspector during a 2M/MTR/FOTR repair site certification.
 - a. The 2M and MTR Certification Agents shall accompany and observe the 2M/MTR/FOTR Fleet Coordinator during a 2M/MTR/FOTR Repair Site or 2M/MTR/FOTR Inspector Site certification.
16. Summarize the certification:
 - a. Major Deficiencies
 1. A major deficiency prevents the capability to perform any specific task of a 2M or MTR recertification and is cause for failure of the site certification.
 2. Examples of 2M/MTR/FOTR major deficiencies include:
 - a) Missing ESD control capabilities.
 - b) Any combination of missing tools or inoperable 2M or MTR equipment that would prevent completing a 2M or MTR recertification.
 - c) Missing eye protection.
 - d) 2M/MTR/FOTR inspector site failing to meet the minimum standards of NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M Standard Maintenance Practices for 2M Electronics Assembly Repair, WP 003 00, Facility Requirements.
 - e) A recertifying technician is unable to properly operate the 2M/MTR/FOTR equipment at their workstation (footswitches, microscope, etc.).
 - f) Insufficient quantity of individual power receptacles to support required 2M equipment and/or MTR equipment
 - b. Minor Deficiencies
 1. A minor deficiency impairs, but does not prevent, the capability to perform 2M or MTR diagnostic recertifications.
 - a) Examples of 2M/MTR/FOTR minor deficiencies include:

- 1) Missing a single size of extractor tip, eyelet, or ball mill
 - 2) Missing MTR software revisions
 - 3) Any missing or worn test system accessories, outdated software, or other item requiring replacement to support complete MTR Test Station configuration
 - c. If required, action items shall be identified by the 2M/MTR/FOTR Fleet Coordinator or 2M Certification Agent and a Plan of Action and Milestones (POA&M) developed by the 2M/MTR/FOTR Inspector site to address and remedy deficiencies.
 1. The 2M/MTR/FOTR Inspector shall make monthly corrective action progress reports to the 2M/MTR/FOTR Fleet Coordinator.
 - d. General Comments
 1. List any comments and/or information; especially note outstanding performance by personnel or the activity.
 2. Provide any recommendations for the personnel or activity to improve.
 17. Insert the overall results of the certification process in terms of [capable/incapable] of conducting 2M/MTR/FOTR site certifications and 2M/MTR/FOTR personnel recertifications in accordance with this manual.
 18. Conduct a departure briefing with a command representative (Commanding Officer, OIC, or Department Head) and appropriate 2M/MTR/FOTR personnel (2M/MTR/FOTR Inspectors and/or 2M/MTR/FOTR Fleet Coordinator).
 - a. All deficiencies, recommendations for improvement, and commitments shall be discussed and documented.
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3-6.4 Recertification Requirements

1. The 2M/MTR/FOTR Fleet Coordinator or the 2M Certification Agent certify activities as qualified to conduct 2M/MTR/FOTR technician and site certifications when minimum levels of certified personnel, equipment outfitting, and facility requirements are met.
2. The 2M/MTR/FOTR Fleet Coordinators shall certify 2M/MTR/FOTR inspector sites under their cognizance every 12 months in accordance with the 2M/MTR/FOTR Inspector Site Certification Process, paragraph 3-6.3.
 - a. The 2M/MTR/FOTR Fleet Coordinator may extend this interval up to 18 months to facilitate scheduling
3. The 2M Certification Agent shall certify the 2M/MTR/FOTR Fleet Coordinator's inspector site every 12 months in accordance with the 2M/MTR/FOTR Inspector Site Certification Process, paragraph 3-6.3.
 - a. The NAVSEA 2M/MTR/FOTR Program Manager may extend this interval up to 18 months to facilitate scheduling.

3-6.5 Recertification Reporting Requirements

1. The certifications results are submitted to the command representatives in a formal out brief.
2. The 2M/MTR/FOTR Fleet Coordinator or 2M Certification Agent shall document the certification process by completing a 2M/MTR/FOTR Inspector Site Certification Letter (Appendix Q).
 - a. 2M/MTR/FOTR Fleet Coordinators shall forward the 2M/MTR/FOTR Inspector Site Certification Letter to their Regional Maintenance Center for signature.
 - b. 2M Certification Agents shall forward the 2M/MTR/FOTR Inspector Site Certification Letter to Naval Sea Systems Command for signature.
3. The 2M/MTR/FOTR Fleet Coordinator or 2M Certification Agent shall attach a copy of the signed 2M/MTR/FOTR Inspector Site Certification Letter to the 2M/MTR/FOTR Inspector Site record in the 2M/MTR/FOTR database.
4. The 2M/MTR/FOTR Fleet Coordinator or 2M Certification Agent shall issue a 2M/MTR/FOTR Inspector Site Certification Certificate.

3-6.6 Decertification

1. 2M/MTR/FOTR Inspector Sites may be decertified during the certification process by failing to meet any of the criteria listed in paragraph 3-6.4.
 - a. The 2M/MTR/FOTR Fleet Coordinator or 2M Certification Agent shall provide notification of inability to recertify to the Commanding Officer and the NAVSEA 2M/MTR/FOTR Program Manager.

3-7 FOTR INSPECTOR SITES

1. NAVSEA FOTR Inspector sites are provided equipment by NAVSEA for the purpose of O-Level technician recertification and remediation.

3-7.1 Initial Certification Requirements

1. FOTR Inspector Site certification is required for any activity performing FOTR repair site certification and recertification of FOTR technicians.
2. The 2M/MTR/FOTR Fleet Coordinator certifies the FOTR Inspector Sites under their cognizance.
 - a. The FOTR Certification Agent certifies the 2M/MTR/FOTR Fleet Coordinator's FOTR Inspector site.

3-7.2 Initial Certification Reporting Requirements

1. The 2M/MTR/FOTR Fleet Coordinator and FOTR Certification Agent shall document the certification process by completing a FOTR Inspector Site Certification Letter (Appendix R).
 - a. 2M/MTR/FOTR Fleet Coordinators forward the FOTR Inspector Site Certification Letter to their Regional Maintenance Center for signature.
 - b. FOTR Certification Agents forward the FOTR Inspector Site Certification Letter to Naval Sea Systems Command for signature.
2. The 2M/MTR/FOTR Fleet Coordinator or FOTR Certification Agent shall attach a copy of the signed FOTR Inspector Site Certification Letter to the FOTR Inspector Site record in the 2M/MTR/FOTR database.
3. The 2M/MTR/FOTR Fleet Coordinator or FOTR Certification Agent shall issue a FOTR Inspector Site Certification Certificate.

3-7.3 FOTR Inspector Site Certification Process

1. Identify activity (with 2M UIC) being certified.
2. List the date of the certification.
3. Identify certifying activity.
4. Conduct an arrival briefing with a command representative (Commanding Officer, OIC, Department Head, and/or Division Director) and appropriate FOTR personnel (FOTR Inspector and/or 2M/MTR/FOTR Fleet Coordinator).
5. Identify all assigned FOTR Inspectors and/or FOTR Fleet Coordinator including:
 - a. Name
 - b. Rate, Rank
 - c. Planned rotation date (PRD)
 - d. Certification level
 - e. Certification expiration date
6. Inventory and verify performance of the applicable FOTR equipment.
 - a. Document the serial number(s), quantities, and location(s) of the following equipment in the Certification Letter and the 2M/MTR/FOTR database, noting differences with the current configuration:

1. Light Duty Fiber Optic connector repair toolkit per NAVSEA DWG 6872811.
2. Heavy Duty Fiber Optic connector repair toolkit per NAVSEA DWG 6872813.
3. Fiber Optic Test Equipment: Optical Time Domain Reflectometer (SCAT 4310), Single Mode Optical Loss Test Set (SCAT 4952), Multimode Optical Loss Test Set (SCAT 4954) and/or SM/MM Optical Loss Test (SCAT 4960).
- b. Inventory consumables, tools, and support equipment in accordance with the 2M/MTR/FOTR Workstation Checklist (Appendix F).
7. Discuss and evaluate proposed changes in tools, equipment, techniques, and fiber optic training curriculum.
8. Verify Inspector site has an ample supply of the following materials.
 - a. M83522/16 ST Connectors
 - b. Approved COTS ST Connectors
 - c. Approved COTS LC Connectors
 - d. M28876 connectors
 - e. M29504/14 Termini
 - f. M85045/16 cable
 - g. M85045/17 or M85045/18 Cable
 - h. HAZMAT: F112 Epoxy
 - i. Measurement Quality Jumpers
 - j. Known defective cable assemblies for troubleshooting
 - k. Assembly and polishing consumables (syringes, polish papers, etc.)
 - l. List deficiencies and corrective actions.
9. Verify the site has access to the NSWC Dahlgren Fiber Optic Website and the 2M/MTR/FOTR SharePoint site for FOTR Program documents.
10. Verify FOTR Inspectors are reporting completion of FOTR Repair Site certifications and FOTR personnel recertifications in the 2M/MTR/FOTR database.
11. Verify a FOTR Inspector Certification Letter is issued for each active FOTR Inspector.
12. Review and document the certification status of the FOTR Sites under the cognizance of the FOTR Inspector or 2M/MTR/FOTR Fleet Coordinator.

13. The 2M/MTR/FOTR Fleet Coordinator shall accompany and observe the FOTR Inspector during a FOTR repair site certification.
 - a. The FOTR Certification Agent shall accompany and observe the 2M/MTR/FOTR Fleet Coordinator during a FOTR Repair Site or FOTR Inspector Site certification.
14. Summarize the certification:
 - a. Major Deficiencies
 1. A major deficiency prevents the capability to perform any specific task of a FOTR recertification and is cause for failure of the site certification.
 - a) Examples of FOTR major deficiencies include:
 - 1) Any combination of missing tools, materials, or inoperable FOTR equipment that would prevent completing a FOTR recertification.
 - 2) Missing eye protection.
 - 3) A recertifying technician is unable to properly operate the FOTR equipment at their workstation.
 - b. Minor Deficiencies
 1. A minor deficiency impairs, but does not prevent, the capability to perform FOTR diagnostic recertifications.
 - a) Examples of FOTR minor deficiencies include:
 - 1) Missing non-critical tooling or materials that results in a minor deviation from the methods but still allows for proper completion of the recertification task
 - c. If required, action items shall be identified by the 2M/MTR/FOTR Fleet Coordinator or FOTR Certification Agent and a Plan of Action and Milestones (POA&M) developed by the FOTR Inspector site to address and remedy deficiencies.
 1. The FOTR Inspector shall make monthly corrective action progress reports to the 2M/MTR/FOTR Fleet Coordinator.
 - d. General Comments
 1. List any comments and/or information; especially note outstanding performance by personnel or the activity.
 2. Provide any recommendations for the personnel or activity to improve.
15. Insert the overall results of the certification process in terms of [capable/incapable] of conducting FOTR site certifications and FOTR personnel recertifications in accordance with this manual.

16. Conduct a departure briefing with a command representative (Commanding Officer, OIC, or Department Head) and appropriate FOTR personnel (FOTR Inspectors and/or 2M/MTR/FOTR Fleet Coordinator).
- a. All deficiencies, recommendations for improvement, and commitments shall be discussed and documented.

3-7.4 Recertification Requirements

1. The 2M/MTR/FOTR Fleet Coordinator or the FOTR Certification Agent certify activities as qualified to conduct FOTR technician and site certifications when minimum levels of certified personnel, equipment outfitting, and facility requirements are met.
2. The 2M/MTR/FOTR Fleet Coordinators shall certify FOTR Inspector sites under their cognizance every 12 months in accordance with the FOTR Inspector Site Certification Process, paragraph 3-7.3.
 - a. The 2M/MTR/FOTR Fleet Coordinator may extend this interval up to 18 months to facilitate scheduling
3. The FOTR Certification Agent shall certify the 2M/MTR/FOTR Fleet Coordinator's inspector site every 12 months in accordance with the FOTR Inspector Site Certification Process, paragraph 3-7.3.
 - a. The NAVSEA 2M/MTR/FOTR Program Manager may extend this interval up to 18 months to facilitate scheduling.

3-7.5 Recertification Reporting Requirements

1. The certifications results are submitted to the command representatives in a formal outbrief.
2. The 2M/MTR/FOTR Fleet Coordinator or FOTR Certification Agent shall document the certification process by completing a FOTR Inspector Site Certification Letter (Appendix R).
 - a. FOTR Fleet Coordinators shall forward the FOTR Inspector Site Certification Letter to their Regional Maintenance Center for signature.
 - b. The FOTR Certification Agent shall forward the FOTR Inspector Site Certification Letter to Naval Sea Systems Command for signature.
3. The 2M/MTR/FOTR Fleet Coordinator or FOTR Certification Agent shall attach a copy of the signed FOTR Inspector Site Certification Letter to the FOTR Inspector Site record in the 2M/MTR/FOTR database.
4. The 2M/MTR/FOTR Fleet Coordinator or FOTR Certification Agent shall issue a 2M/MTR/FOTR Inspector Site Certification Certificate.

3-7.6 Decertification

1. FOTR Inspector Sites may be decertified during the certification process by failing to meet any of the criteria listed in paragraph 3-7.4.
 - a. The 2M/MTR/FOTR Fleet Coordinator or FOTR Certification Agent shall provide notification of inability to recertify to the Commanding Officer and the NAVSEA 2M/MTR/FOTR Program Manager.

3-8 2M/MTR/FOTR FLEET COORDINATOR SITES

1. NAVSEA 2M/MTR/FOTR Fleet Coordinator sites are provided equipment by NAVSEA for the purpose of technician recertification and remediation.
 - a. NAVSEA 2M/MTR/FOTR Fleet Coordinator sites and 2M/MTR/FOTR repair sites shall be separately maintained.

3-8.1 Initial Certification Requirements

1. 2M/MTR/FOTR Site certification is required for any activity performing 2M/MTR/FOTR repair site certification and recertification of 2M/MTR/FOTR technicians.
2. The 2M/MTR/FOTR Fleet Coordinator certifies the 2M/MTR/FOTR Inspector Sites under their cognizance.
 - a. Certification Agents certify each 2M /MTR/FOTR Fleet Coordinator's 2M /MTR/FOTR recertification site.

3-8.2 Initial Certification Reporting Requirements

1. The Certification Agents shall document the certification process by completing a 2M/MTR/FOTR Inspector Site Certification Letter (Appendix S).
 - a. Certification Agents forward the 2M/MTR/FOTR Fleet Coordinator Site Certification Letter to Naval Sea Systems Command for signature.
2. The Certification Agent shall attach a copy of the signed 2M/MTR/FOTR Fleet Coordinator Site Certification Letter to the 2M/MTR/FOTR Site record in the 2M/MTR/FOTR database.
3. The Certification Agent shall issue a 2M/MTR/FOTR Fleet Coordinator Site Certification Certificate.

3.8.3 2M/MTR/FOTR Fleet Coordinator Site Certification Process

1. Identify activity (with 2M UIC) being certified.
2. List the date of the certification.

3. Identify certifying activity.
4. Conduct an arrival briefing with a command representative (Commanding Officer, OIC, Department Head, and/or Division Director) and 2M/MTR/FOTR Fleet Coordinator).
5. Identify all assigned 2M/MTR/FOTR Inspectors under the cognizance of the 2M/MTR/FOTR Fleet Coordinator including:
 - a. Name
 - b. Rate, Rank
 - c. Planned rotation date (PRD)
 - d. Certification level
 - e. Certification expiration date
 - f. A command manpower review and NEC realignment is recommended to account for those 2M/MTR/FOTR Inspectors no longer assigned NEC 772B responsibilities due to changing job position or advancement.
6. Inventory and verify performance of the applicable 2M/MTR/FOTR equipment.
 - a. Document the serial number(s), quantities, and location(s) of the following equipment in the Certification Letter and the 2M/MTR/FOTR database, noting differences with the current configuration:
 - 1) 2M Electronic Rework Power Unit: PRC-2000, MBT-250, ST-25, etc.
 - 2) Auxiliary Equipment: microscope, fiber optic lamp, ESD constant monitoring station, preheater, etc.
 - 3) MTR Equipment: MTR Test Station Controller, MTR Test Equipment, ESD constant monitoring station, Uninterruptible Power Supply, and associated accessories
 - 4) FOTR Equipment: Fiber Optic Kits and tooling IAW Appx F, correct MQJs IAW Appx F, Test Equipment (SCAT 4310, 4952, 4954, 4960)
 - b. Inventory consumables, tools, and support equipment in accordance with the 2M/MTR/FOTR Workstation Checklist (Appendix F).
 - c. Verify applicable 2M/MTR/FOTR equipment is operational in accordance with the 2M/MTR/FOTR Equipment Verification Process (Appendix I).
7. Discuss and evaluate proposed changes in tools, equipment, techniques, and 2M, MTR, or FOTR training curriculum.
8. Verify Recertification Site has an ample supply of the following materials:
 - a. 2M Materials

- 1) Miniature Recertification Kits (A-100-0072R)
- 2) Microminiature Recertification Kits (A-100-0073R)
- 3) Conformally Coated CCAs
- 4) Ceramic CCAs
- 5) Required Hazmat
- b. MTR Materials
 - 1) MTR recertification CCAs
 - 2) Current MTR Test Routines and MTR software
- c. FOTR Materials
 - 1) M83522/16 ST Connectors
 - 2) Approved COTS ST Connectors
 - 3) Approved COTS LC Connectors
 - 4) M28876 connectors
 - 5) M29504/14 Termini
 - 6) M85045/16 cable
 - 7) M85045/17 or M85045/18 Cable
 - 8) HAZMAT: F112 Epoxy
 - 9) Measurement Quality Jumpers
 - 10) Known defective cable assemblies for troubleshooting
 - 11) Assembly and polishing consumables (syringes, polish papers, etc.)
9. List deficiencies and corrective actions.
10. Evaluate the site to ensure compliance with NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M Standard Maintenance Practices for 2M Electronics Assembly Repair, WP003 00, paragraph 03-4.4, 2M Facility Requirements.
11. Evaluate the workbench(es) to ensure compliance with NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M Standard Maintenance Practices for 2M Electronic Assembly Repair, WP003 00, paragraph 03-4., 2M Workstation.
12. Verify the site has access to the 2M/MTR/FOTR SharePoint site for 2M/MTR/FOTR documents.
13. Verify 2M/MTR/FOTR Fleet Coordinators are reporting completion of 2M/MTR Repair Site certifications and 2M/MTR/FOTR personnel recertifications in the 2M/MTR/FOTR database.
14. Verify a 2M/MTR/FOTR Inspector Certification Letter is issued for each 2M/MTR/FOTR Inspector.

15. Review and document the certification status of the 2M/MTR/FOTR Sites under the cognizance of the 2M/MTR/FOTR Fleet Coordinator.
16. Certification Agents shall accompany and observe the 2M/MTR/FOTR Fleet Coordinator during a 2M/MTR/FOTR repair site certification.
17. Summarize the certification:
 - a. Major Deficiencies
 - 1) A major deficiency prevents the capability to perform any specific task of a 2M, MTR, or FOTR recertification and is cause for failure of the site certification.
 - 2) Examples of 2M/MTR major deficiencies include:
 - a) Missing ESD control capabilities.
 - b) Any combination of missing tools or inoperable 2M or MTR equipment that would prevent completing a 2M or MTR recertification.
 - c) Missing eye protection.
 - d) 2M/MTR inspector site failing to meet the minimum standards of NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M Standard Maintenance Practices for 2M Electronics Assembly Repair, WP 003 00, Facility Requirements.
 - e) A recertifying technician is unable to properly operate the 2M/MTR equipment at their workstation (footswitches, microscope, etc.).
 - f) Insufficient quantity of individual power receptacles to support required 2M equipment and/or MTR equipment
 - 3) Examples of FOTR major deficiencies include:
 - a) Any combination of missing tools, materials, or inoperable FOTR equipment that would prevent completing a FOTR recertification.
 - b) Missing eye protection.
 - c) A recertifying technician is unable to properly operate the FOTR equipment at their workstation.
 - b. Minor Deficiencies
 - 1) A minor deficiency impairs, but does not prevent, the capability to perform 2M repair, MTR diagnostic recertification, or FOTR recertification.
 - 2) Examples of 2M/MTR/FOTR minor deficiencies include:
 - a) Missing a single size of extractor tip, eyelet, or ball mill
 - b) Missing MTR software revisions
 - c) Any missing or worn test system accessories, outdated software, or other item requiring replacement to support complete MTR Test Station configuration

- d) Missing non-critical tooling or materials that results in a minor deviation from the methods but still allows for proper completion of the recertification task
- c. If required, action items are identified by the Certification Agent and a Plan of Action and Milestones (POA&M) developed for the 2M/MTR/FOTR Fleet Coordinator site to address and remedy deficiencies.
 - 1) The 2M/MTR/FOTR Fleet Coordinator shall make monthly corrective action progress reports to the Certification Agent.
- d. General Comments
 - 1) List any comments and/or information; especially note outstanding performance by personnel or the activity.
 - 2) Provide any recommendations for the personnel or activity to improve.
- 18. Insert the overall results of the certification process in terms of [capable/incapable] of conducting 2M/MTR/FOTR site certifications and 2M/MTR/FOTR personnel recertifications in accordance with this manual.
- 19. Conduct a departure briefing with a command representative (Commanding Officer, OIC, or Department Head) and appropriate 2M/MTR/FOTR personnel (2M/MTR/FOTR Fleet Coordinator).
 - a. All deficiencies, recommendations for improvement, and commitments shall be discussed and documented.

3-8.4 Recertification Requirements

- 1. The Certification Agents certify 2M/MTR/FOTR Fleet Coordinator activities as qualified to conduct 2M/MTR/FOTR technician and site certifications when minimum levels of certified personnel, equipment outfitting, and facility requirements are met.
- 2. Certification Agents shall verify Fleet Coordinators are certifying the 2M/MTR/FOTR Inspector Sites under their cognizance every 12 months in accordance with the 2M/MTR/FOTR Site Certification Process, paragraph 3-6.3.
 - a. Certification Agents may extend this interval up to 18 months to facilitate scheduling.
 - b. Certification Agents shall certify the 2M/MTR/FOTR Fleet Coordinator's Recertification Site every 12 months in accordance with the 2M/MTR/FOTR Site Certification Process, paragraph 3-6.3.

3-8.5 Recertification Reporting Requirements

- 1. The certification results are submitted to the command representatives in a formal out brief.
- 2. Certification Agents shall document the certification process by completing a 2M/MTR Fleet Coordinator Site Certification Letter (Appendix S).

- a. Certification Agents shall forward the 2M/MTR/FOTR Fleet Coordinator Site Certification Letter to Naval Sea Systems Command for signature.
 3. The 2M/MTR/FOTR Certification Agent shall attach a copy of the signed 2M/MTR/FOTR Fleet Coordinator Site Certification Letter to the 2M/MTR/FOTR Inspector Site record in the 2M/MTR/FOTR database.
 4. The 2M/MTR/FOTR Certification Agent shall issue a 2M/MTR/FOTR Fleet Coordinator Site Certification Certificate.
-

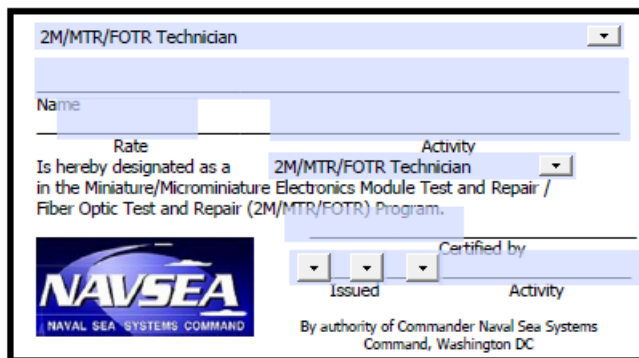
3-8.6 Decertification

1. 2M/MTR/FOTR Fleet Coordinator Sites may be decertified during the certification process by failing to meet any of the criteria listed in paragraph 3-6.4.
 - a. The 2M/MTR/FOTR Certification Agent shall provide notification of inability to recertify to the Commanding Officer and the NAVSEA 2M/MTR/FOTR Program Manager.

Appendix A

2M/MTR/FOTR Certification Identification Card

1. The card below is an example of the 2M/MTR/FOTR Certification Identification Card.
2. A PDF printable form with dropdowns for making 2M/MTR/FOTR Certification Identification Cards is available in the Shared Documents folders on the 2M/MTR/FOTR Database SharePoint site.
 - a. For access to the 2M/MTR/FOTR Database SharePoint site contact 2M/MTR/FOTR SharePoint Administrator via e-mail at 2mmtr_help@us.navy.mil.



2M/MTR/FOTR Technician

Name

Rate Activity

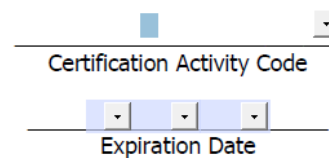
Is hereby designated as a 2M/MTR/FOTR Technician in the Miniature/Microminiature Electronics Module Test and Repair / Fiber Optic Test and Repair (2M/MTR/FOTR) Program.

NAVSEA
NAVAL SEA SYSTEMS COMMAND

Certified by

Issued Activity

By authority of Commander Naval Sea Systems Command, Washington DC



Certification Activity Code

Expiration Date

Appendix B

FOTR Recertification Pre-Test

1. MIL-STD-2042 (Series) provides requirements and detailed methods for the _____ of fiber optic cabling and associated components on surface ships and submarines.
 - a. Design
 - b. Installation and Testing
 - c. Procurement
 - d. Capability
2. Match the following parts of MIL-STD-2042:
 - a. Part 1 _____ Cable Penetrations
 - b. Part 3 _____ Cableways
 - c. Part 4 _____ Connectors and Interconnections
 - d. Part 5 _____ Cables
3. Fiber optic cables for Naval Shipboard application shall be in accordance with _____.
 - a. MIL-C-83522
 - b. MIL-STD-2042
 - c. MIL-PRF-85045
 - d. MIL-I-24728
4. The MIL-STD-2042C end face polishing process involves the use of _____ micron papers. (Choose the best answer).
 - a. 5, 3, 1, 0.1
 - b. 3, 0.1, Slurry
 - c. 5, 1, 0.1
 - d. 1, 0.1, Slurry
5. An acceptable end face polish may contain _____.
 - a. One pit in fiber end
 - b. Deep scratches in cladding
 - c. No deep scratches or chips in fiber
 - d. Chips out of fiber end

6. True or False – Measurement Quality Jumpers (MQJs) are required for connecting optical fiber cable assemblies or links to test equipment.
- a. True
 - b. False
7. The Cable Assembly Link Loss Test performs a _____ jumper reference.
- a. 1
 - b. 2
 - c. 3
 - d. The Cable Assembly Link Loss Test is not in MIL-STD-2042C
8. The maximum component loss values for single terminus connectors in MIL-STD-2042C is _____.
- a. 0.2 dB
 - b. 0.5 dB
 - c. 0.75 dB
 - d. 1.0 dB
9. For Navy shipboard applications, connectors are grouped into two classes; ____ and ____.
- a. LC and SC
 - b. Light duty and Heavy duty
 - c. ST and SC
 - d. MT and MTRJ
10. _____ connectors are used only in protected areas such as within equipment interiors and within fiber optic interconnection boxes.
- a. Light Duty
 - b. Heavy Duty
 - c. Medium Duty
 - d. No Duty
11. An MQJ with ST end connectors is acceptable if the mean loss is between ____ and ____.
- a. 0.00dB and 0.5dB
 - b. 0.35dB and 0.5dB
 - c. 0.00dB and 0.35dB
 - d. None of the above

12. True or False – Conventional fiber optic cables are allowed to be repaired by a cable splice within the cableway
- a. True
 - b. False
13. Fiber Optic Troubleshooting, Test, and Repair methods can be found in Chapter _____ of the Navy Systems Technical Manual
- a. 397
 - b. 400
 - c. 415
 - d. 408
14. Both sides of a fiber optic connection shall always be _____ before the connection is made.
- a. Tested
 - b. Covered
 - c. Inspected, Cleaned, and Inspected
 - d. Replaced

FOTR Recertification Performance Test

NAME (Last, First, MI):

RATE:

ACTIVITY:

UIC:

PRD:

WORK e-MAIL:

1. The FOTR Repair Technician must satisfactorily complete the projects listed below. All specifications are contained in MIL-STD-2042 and S9086-PF-STM-010/CH-408. All work must comply with the workmanship standards listed in the respective methods (listed as MIL-STD-2042/NSTM CH408) and testing requirements of MIL-STD-2042-6.

Pretest		
Complete FOTR Recertification Pretest		
Project		
1. Build and polish a M85045/16 1m cable assembly with M83522/16 or COTS ST connectors on one end and a COTS LC on the other end, then optically test.	Recertifier Comments	
		Technician self-evaluation
ST Connector Build	Method 5B1/Method U	
LC Connector Build	Method 5B2/Method U2	
Polished End Face	Method 5D3/Method U Procedures IV & V	
Cable Assembly Link Loss	Method 6C1/Method A	
Project		
2. Perform Fault Isolation to determine the fiber optic fault associated with the provided "Test Rig" cable assembly.	Recertifier Comments	
		Technician self-evaluation
Fault Isolation	N/A / Method P	

Project		
3. Disassemble the M28876 connector on the provided cable assembly, Replace both termini, and reassemble the M28876 then optically test.		Recertifier Comments
		Technician self-evaluation
Connector Disassembly and Reassembly	Methods 5A1-5A6/Method V	
Polished End Face	Method 5D3/Method V	
Cable Assembly Link Loss	Method 6C1/Method A	

EVALUATION BY:

START DATE:

COMPLETION DATE:

OVERALL PERFORMANCE:

NOTES:

Original to: [Technician (Training Record)]
Copy to: [FOTR Inspector]

Appendix C

Miniature Electronics Repair Recertification Pre-Test

Note the work package and paragraph where the information is located.

1. The strands of a wire on a turret terminal not visible in the solder connection is a _____ condition.
2. The maximum insulation clearance between the end of the wire insulation and the outside edge of the terminal is _____.
3. Solder spillage on a solder cup is a defect condition when _____.
4. What information is contained in Table 06-1? _____
5. Semi-clinched terminations can be used on isolated pads. T / F
6. Shipping and storing CCAs in pink antistatic polyethylene will provide complete ESD protection. T / F
7. A properly grounded wrist strap is not required when working at a workstation that has a constant monitoring device. T / F
8. The lap solder joint on an end of conductor repair shall be a minimum of _____ pad diameters from any solderable area.
9. The replacement conductor in an end of conductor repair must be long enough to overlap the original conductor a minimum of _____ conductor widths.
10. _____ is the preferred method for stripping wires.
11. What desoldering pattern is used when desoldering multi-lead components?
_____.
12. What is the required width and depth of the undercut in a surface patch excavation? _____.
13. When are DIP leads terminated? _____.
14. Semi-clinched terminations should be formed to a _____ angle in the direction of the
_____.
15. A procedure of reducing a soldering iron tip temperature rapidly to cause solidification of the contaminates for thorough cleaning is called _____.
16. A void in a solder connection caused by outgassing of flux or moisture is called a _____.

17. A thin layer of epoxy applied over a laminate repair to cap exposed fibers is a _____.
18. What type of action does solder wick use to remove solder? _____
19. The ability of solder to readily flow over the surface of the materials being soldered is _____.
20. Touching the equipment before working on the equipment is sufficient for ESD protection. T / F
21. The only authorized solder alloys for use in 2M repairs are _____ and _____.

Miniature Electronics Repair Recertification Performance Test

NAME (Last, First, MI):

RATE:

ACTIVITY/COMMAND:

2M UIC:

PRD:

WORK e-MAIL:

- The Miniature Electronics Repair Technician must satisfactorily complete the projects listed below. All specifications are contained in NAVAIR 01-1A-23, NAVSEA SE004-AK-TRS-010/2M (work package references are noted below). All work must comply with the workmanship standards listed in the respective work package sections.

Pretest	
Complete Miniature Electronics Repair Recertification Pretest	_____
Daily PMS	
Day 1 MIP 6652/005 R-1, R-3, R-8 (NAVSEA)	_____
PRC and ESD PREOPs & When Utilized Checks (NAVAIR)	_____
Day 2 MIP 6652/005 R-1, R-3, R-8 (NAVSEA)	_____
PRC and ESD PREOPs & When Utilized Checks (NAVAIR)	_____
Day 3 MIP 6652/005 R-1, R-3, R-8 (NAVSEA)	_____
PRC and ESD PREOPs & When Utilized Checks (NAVAIR)	_____
*Day 4 MIP 6652/005 R-1, R-3, R-8 (NAVSEA)	_____
PRC and ESD PREOPs & When Utilized Checks (NAVAIR)	_____
*Day 5 MIP 6652/005 R-1, R-3, R-8 (NAVSEA)	_____
PRC and ESD PREOPs & When Utilized Checks (NAVAIR)	_____
* If remediation is required	_____
Project	
1. Identify four of the following conformal coating types: AR, ER, SR, UR or XY	Recertifier Comments
	Technician self-evaluation
Conformal Coating Identification	06-5.2
Discrete Component Leads	07-6.1
Discrete Component Body	07-6.2
Laminate	11-6.1
Conductors, Pads, and Lands	12-6.1

Project		
2. Install a single wire on a pierced tab		Recertifier Comments
		Technician self-evaluation
Solder Acceptability Requirements	05-6.1	
Post Solder Connection Cleanliness	05-6.2	
Wires	08-6.1	
Insulated Wire Stripping	08-6.2	
Insulated Wire Tinning	08-6.3	
Insulation Clearance	08-6.4	
Wire Forming for Pierced Tab Terminals	08-6.7	
Terminal Soldering Acceptability	08-6.12	
Project		
3. Install a double wire on a turret terminal		Recertifier Comments
		Technician self-evaluation
Solder Acceptability Requirements	05-8.1	
Post Solder Connection Cleanliness	05-8.2	
Wires	08-6.1	
Insulated Wire Stripping	08-6.2	
Insulated Wire Tinning	08-6.3	
Insulation Clearance	08-6.4	
Wire Forming for Turret Terminals	08-6.5	
Terminal Soldering Acceptability	08-6.12	
Project		
4. Install a double wire on hook terminal		Recertifier Comments
		Technician self-evaluation
Solder Acceptability Requirements	05-8.1	
Post Solder Connection Cleanliness	05-8.2	
Wires	08-6.1	
Insulated Wire Stripping	08-6.2	
Insulated Wire Tinning	08-6.3	
Insulation Clearance	08-6.4	
Wire Forming for Hook Terminals	08-6.6	
Terminal Soldering Acceptability	08-6.12	

Project		
5. Install a single wire in a solder cup		Recertifier Comments
		Technician self-evaluation
Solder Acceptability Requirements	05-8.1	
Post Solder Connection Cleanliness	05-8.2	
Wires	08-6.1	
Insulated Wire Stripping	08-6.2	
Insulated Wire Tinning	08-6.3	
Solder Cup Solder Acceptability	09-6.1	
Project		
6. Install and remove a horizontal mount, full clinch, axial lead component on a double-sided CCA		Recertifier Comments
		Technician self-evaluation
Solder Acceptability Requirements	05-8.1	
Post Solder Joint Cleanliness	05-8.2	
Discrete Component Leads	07-6.1	
Discrete Component Body	07-6.2	
Component Lead Tinning	07-6.3	
Component Lead Forming	07-6.8	
Component Orientation	07-6.9	
Component Mounting, Axial Leaded	07-6.10	
Full Clinch Lead Terminations	07-6.18	
Solder Acceptability for Through-Hole Components	07-6.20	
Laminate	11-6.1	
Conductors, Pads and Lands	12-6.1	

Project		
7. Install and remove a transistor on a double sided CCA		Recertifier Comments
		Technician self-evaluation
Solder Acceptability Requirements	05-8.1	
Post Solder Joint Cleanliness	05-8.2	
Discrete Component Leads	07-6.1	
Discrete Component Body	07-6.2	
Component Lead Tinning	07-6.3	
Component Lead Forming	07-6.8	
Component Orientation	07-6.9	
Component Mounting, Vertical Radial Leaded	07-6.14	
Straight-Through Lead Terminations	07-6.16	
Solder Acceptability for Through-Hole Components	07-6.20	
Laminate	11-6.1	
Conductors, Pads, and Lands	12-6.1	
Project		
8. Install and remove a 14/16 lead dual in-line package (DIP) from a double-sided CCA		Recertifier Comments
		Technician self-evaluation
Solder Acceptability Requirements	05-8.1	
Post Solder Joint Cleanliness	05-8.2	
Discrete Component Leads	07-6.1	
Discrete Component Body	07-6.2	
Component Lead Tinning	07-6.3	
Component Orientation	07-6.9	
Component Mounting, Dual In-Line Package	07-6.15	
Solder Acceptability for Through-Hole Components	07-6.20	
Laminate	11-6.1	
Conductors, Pads, and Lands	12-6.1	
Project		
9. Surface patch excavation: excavate, straight wall, undercut, and bevel		Recertifier Comments
		Technician self-evaluation
Laminate	11-6.1	
Laminate Excavation	11-6.2	
Conductors, Pads, and Lands	12-6.1	

Project		
10. End-of-conductor repair: remove damaged conductor, salvage or manufacture conductor, solder replacement, epoxy conductor, set eyelet, solder eyelet		Recertifier Comments
		Technician self-evaluation
Solder Acceptability Requirements	05-8.1	
Post Solder Joint Cleanliness	05-8.2	
Laminate	11-6.1	
Conductors, Pads, and Lands	12-6.1	
Eyeletting	12-6.2	
Lap Solder Repair	12-6.4	
Project		
11. Install a BNC with a soldered center pin on coaxial cable		Recertifier Comments
		Technician self-evaluation
Solder Acceptability Requirements	05-8.1	
Post Solder Joint Cleanliness	05-8.2	
Coaxial Cable Stripping	21-6.1	
Connector Pins, Soldered	21-6.2	
Shield Termination of Braid Clamp	21-6.4	
Connector Center Pin Position	21-6.6	

2. During the recertification, the technician observed all safety precautions and maintained a clean, orderly, and electrostatic discharge (ESD) safe work area. [SAT/UNSAT]

EVALUATION BY:

START DATE:

COMPLETION DATE:

OVERALL PERFORMANCE:

NOTES:

Original to: [Technician (Training Record)]
Copy to: [2M/MTR/FOTR Inspector or 2M/MTR Technician Recertifier]

Appendix D

Microminiature Electronics Repair Recertification Pre-Test

Note the work package and paragraph where the information is located.

1. The strands of a wire not visible in the turret solder connection is a _____ condition.
2. The maximum insulation clearance between the end of the wire insulation and the outside edge of the terminal is _____.
3. Solder spillage on a solder cup is a defect condition when _____.
4. What information is contained in Table 06-1? _____
5. Semi-clinched terminations can be used on isolated pads. T / F
6. What two methods of multi-lead SMD removal preparations are recommended?
_____ and _____.
7. Why is the preheater used for surface mount repair? _____.
8. When would you use precision strippers to strip a jumper wire? _____

9. When can a jumper wire be routed over or under a component lead or component body?
_____.
10. Shipping and storing CCAs in pink antistatic polyethylene will provide complete ESD protection. T / F
11. A properly grounded wrist strap is not required when working at a workstation that has a constant monitoring device. T / F
12. The lap solder joint in an end of conductor repair shall be a minimum of _____ pad diameters from any solderable area.
13. The replacement conductor in an end of conductor repair must be long enough to overlap the original conductor a minimum of _____ conductor widths.
14. _____ is the preferred method for stripping wires.
15. What desoldering pattern is used when desoldering multi-lead components?
_____.

16. What is the required width and depth of the undercut in a surface patch excavation? _____.
17. When are DIP leads terminated? _____.
18. Semi-clinched terminations are formed to a _____ angle in the direction of the _____.
19. A procedure of reducing a soldering iron tip temperature rapidly to cause solidification of the contaminates for thorough cleaning is called _____.
20. A void in a solder connection caused by outgassing of flux or moisture is called a _____.
21. A thin layer of epoxy applied over a laminate repair to cap exposed fibers is a _____.
22. What type of action does solder wick use to remove solder? _____.
23. The ability of solder to readily flow over the surface of the materials being soldered is _____.
24. Touching the equipment before working on the equipment is sufficient for ESD protection. T / F
25. The only authorized solder alloys for use in 2M repairs are _____ and _____.

NAME (Last, First, MI):

RATE:

2M UIC:

PRD:

WORK e-MAIL:

- | Pretest | | | | | |
|---|--|--------|--|----------------------------|--|
| Complete Microminiature Electronics Repair Recertification Pretest | | | | | |
| Daily PMS | | | | | |
| Day 1 MIP 6652/005 R-1, R-3, R-8 (NAVSEA) | | | | | |
| PRC and ESD PREOPs & When Utilized Checks (NAVAIR) | | | | | |
| Day 2 MIP 6652/005 R-1, R-3, R-8 (NAVSEA) | | | | | |
| PRC and ESD PREOPs & When Utilized Checks (NAVAIR) | | | | | |
| Day 3 MIP 6652/005 R-1, R-3, R-8 (NAVSEA) | | | | | |
| PRC and ESD PREOPs & When Utilized Checks (NAVAIR) | | | | | |
| *Day 4 MIP 6652/005 R-1, R-3, R-8 (NAVSEA) | | | | | |
| PRC and ESD PREOPs & When Utilized Checks (NAVAIR) | | | | | |
| *Day 5 MIP 6652/005 R-1, R-3, R-8 (NAVSEA) | | | | | |
| PRC and ESD PREOPs & When Utilized Checks (NAVAIR) | | | | | |
| * If remediation is required | | | | | |
| Project | | | | | |
| 1. Identify four of the following conformal coating types: AR, ER, SR, UR or XY | | | | Recertifier Comments | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | Technician self-evaluation | |
| Conformal Coating Identification | | 06-5.2 | | | |
| Discrete Component Leads | | 07-6.1 | | | |
| Discrete Component Body | | 07-6.2 | | | |
| Laminate | | 11-6.1 | | | |
| Conductors, Pads, and Lands | | 12-6.1 | | | |

Project		
2. Install a double wire on tab, hook or turret terminal		Recertifier Comments
		Technician self-evaluation
Solder Acceptability Requirements	05-8.1	
Post Solder Connection Cleanliness	05-8.2	
Wires	08-6.1	
Insulated Wire Stripping	08-6.2	
Insulated Wire Tinning	08-6.3	
Insulation Clearance	08-6.4	
Wire Forming for Turret Terminals	08-6.5	
Wire Forming for Hook Terminals	08-6.6	
Wire Forming for Pierced Tab Terminals	08-6.7	
Terminal Soldering Acceptability	08-6.12	
Project		
3. Install a single wire in a solder cup		Recertifier Comments
		Technician self-evaluation
Solder Acceptability Requirements	05-8.1	
Post Solder Connection Cleanliness	05-8.2	
Wires	08-6.1	
Insulated Wire Stripping	08-6.2	
Insulated Wire Tinning	08-6.3	
Solder Cup Solder Acceptability	09-6.1	

Project		
4. Install and remove a transistor on a double sided CCA		Recertifier Comments
		Technician self-evaluation
Solder Acceptability Requirements	05-8.1	
Post Solder Joint Cleanliness	05-8.2	
Discrete Component Leads	07-6.1	
Discrete Component Body	07-6.2	
Component Lead Tinning	07-6.3	
Component Lead Forming	07-6.8	
Component Orientation	07-6.9	
Component Mounting, Vertical Radial Leaded	07-6.14	
Straight-Through Lead Terminations	07-6.16	
Solder Acceptability for Through-Hole Components	07-6.20	
Laminate	11-6.1	
Conductors, Pads, and Lands	12-6.1	
Project		
5. Install and remove a 14/16 lead dual in-line package (DIP) from a double-sided CCA		Recertifier Comments
		Technician self-evaluation
Solder Acceptability Requirements	05-8.1	
Post Solder Joint Cleanliness	05-8.2	
Discrete Component Leads	07-6.1	
Discrete Component Body	07-6.2	
Component Lead Tinning	07-6.3	
Component Orientation	07-6.9	
Component Mounting, Dual In-Line Package	07-6.15	
Solder Acceptability for Through-Hole Components	07-6.20	
Laminate	11-6.1	
Conductors, Pads, and Lands	12-6.1	
Project		
6 Surface patch excavation: excavate, straight wall, undercut, and bevel		Recertifier Comments
		Technician self-evaluation
Laminate	11-6.1	
Laminate Excavation	11-6.2	
Conductors, Pads, and Lands	12-6.1	

Project		
7. End-of-conductor repair: remove damaged conductor, salvage or manufacture conductor, solder replacement, epoxy conductor, set eyelet, solder eyelet		Recertifier Comments
		Technician self-evaluation
Solder Acceptability Requirements	05-8.1	
Post Solder Joint Cleanliness	05-8.2	
Laminate	11-6.1	
Conductors, Pads, and Lands	12-6.1	
Eyeletting	12-6.2	
Lap Solder Repair	12-6.4	
Project		
8. Install a BNC with a soldered center pin on coaxial cable		Recertifier Comments
		Technician self-evaluation
Solder Acceptability Requirements	05-8.1	
Post Solder Joint Cleanliness	05-8.2	
Coaxial Cable Stripping	21-6.1	
Connector Pins, Soldered	21-6.2	
Shield Termination of Braid Clamp	21-6.4	
Connector Center Pin Position	21-6.6	
Project		
9. Install and remove a MELF		Recertifier Comments
		Technician self-evaluation
Solder Acceptability Requirements	05-8.1	
Post Solder Joint Cleanliness	05-8.2	
Surface Mount Devices	18-6.1	
Surface Device Mount Leads	18-6.2	
Surface Mount Circuit Card Assembly Lands and Conductors	18-6.3	
Surface Mount Device Mounting	18-6.4	
Surface Mount Device Positioning and Soldering	18-6.5	
Surface Mount Soldering Anomalies	18-6.7	
Laminate	11-6.1	

Project		
10. Install and remove an SOT		Recertifier Comments
		Technician self-evaluation
Solder Acceptability Requirements	05-8.1	
Post Solder Joint Cleanliness	05-8.2	
Surface Mount Devices	18-6.1	
Surface Device Mount Leads	18-6.2	
Surface Mount Circuit Card Assembly Lands and Conductors	18-6.3	
Surface Mount Device Mounting	18-6.4	
Surface Mount Device Positioning and Soldering	18-6.5	
Surface Mount Soldering Anomalies	18-6.7	
Laminate	11-6.1	
Project		
11. Install and remove a tantalum capacitor on a ceramic CCA		Recertifier Comments
		Technician self-evaluation
Solder Acceptability Requirements	05-8.1	
Post Solder Joint Cleanliness	05-8.2	
Surface Mount Devices	18-6.1	
Surface Device Mount Leads	18-6.2	
Surface Mount Circuit Card Assembly Lands and Conductors	18-6.3	
Surface Mount Device Mounting	18-6.4	
Surface Mount Device Positioning and Soldering	18-6.5	
Surface Mount Soldering Anomalies	18-6.7	
Laminate	11-6.1	
Project		
12. Install and remove a PQFP		Recertifier Comments
		Technician self-evaluation
Solder Acceptability Requirements	05-8.1	
Post Solder Joint Cleanliness	05-8.2	
Surface Mount Devices	18-6.1	
Surface Device Mount Leads	18-6.2	
Surface Mount Circuit Card Assembly Lands and Conductors	18-6.3	
Surface Mount Device Mounting	18-6.4	
Surface Mount Device Positioning and Soldering	18-6.5	
Surface Mount Soldering Anomalies	18-6.7	
Laminate	11-6.1	

Project		
13. Install and remove a PLCC		Recertifier Comments
		Technician self-evaluation
Solder Acceptability Requirements	05-8.1	
Post Solder Connection Cleanliness	05-8.2	
Surface Mount Devices	18-6.1	
Surface Device Mount Leads	18-6.2	
Surface Mount Circuit Card Assembly Lands and Conductors	18-6.3	
Surface Mount Device Mounting	18-6.4	
Surface Mount Device Positioning and Soldering	18-6.5	
Surface Mount Soldering Anomalies	18-6.7	
Laminate	11-6.1	
Project		
14. Install a jumper wire between a gull wing lead and a J lead component with a minimum of two bends.		Recertifier Comments
		Technician self-evaluation
Solder Acceptability Requirements	05-8.1	
Post Solder Joint Cleanliness	05-8.2	
Jumper Wire Selection and Preparation	19-6.1	
Jumper Wire Routing	19-6.2	
Jumper Wire Solder Acceptability	19-6.3	
Jumper Wire Terminated to a Gull Wing Lead	19-6.8	
Jumper Wire Terminated to a J-Lead	19-6.9	
Jumper Wire Bonding	19-6.11	
Laminate	11-6.1	

2. During the recertification, the technician observed all safety precautions and maintained a clean, orderly, and electrostatic discharge (ESD) safe work area. [SAT/UNSAT]

EVALUATION BY:

START DATE:

COMPLETION DATE:

OVERALL PERFORMANCE:

NOTES:

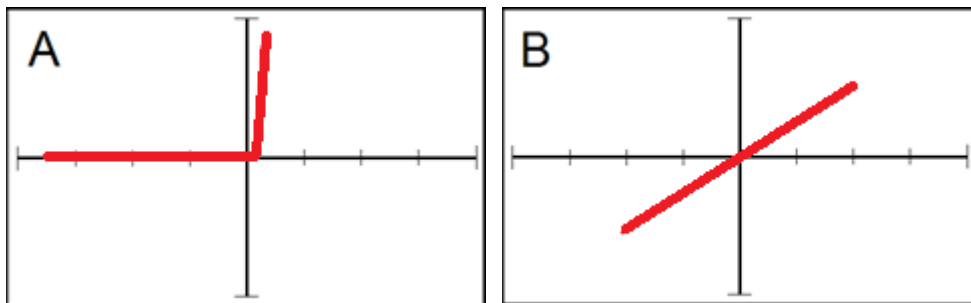
Original to: [Technician (Training Record)]
Copy to: [2M/MTR/FOTR Inspector or 2M/MTR Technician Recertifier]

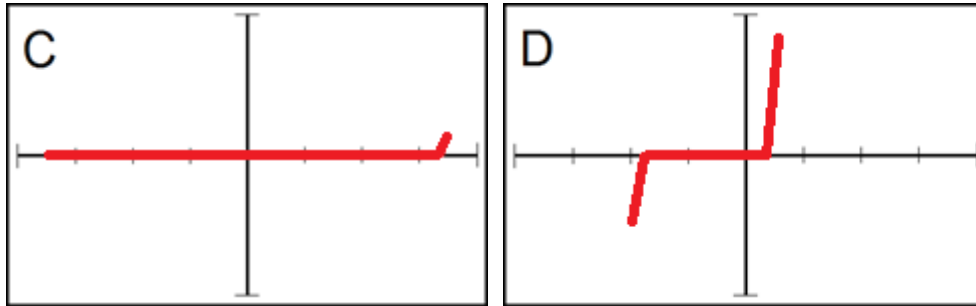
Appendix E

MTR Recertification Pre-Test

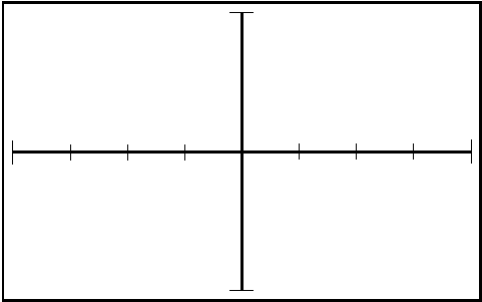
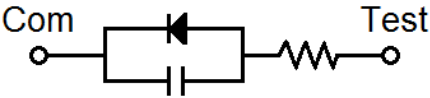
- 1) What is the goal of every 2M/MTR repair shop? (Circle the most correct answer)
 - a) Provide cost savings to the command.
 - b) Improve command readiness.
 - c) Increase equipment sustainability.
 - d) All of the above.
- 2) The AN/USM-726(V) is considered Automated Test Equipment (ATE).
 - a) True
 - b) False
- 3) ESDS is the acronym for:
 - a) Emergency Shut Down System (2M Bench kill switch)
 - b) Electrostatic Device Sensitivity
 - c) Electronic Shark Defense System
 - d) Electrostatic Discharge Sensitive
- 4) Resistors are not susceptible to ESD and do not require special handling.
 - a) True
 - b) False
- 5) 2M/MTR Technicians should contact _____ for assistance in locating a source for a hard to find replacement component or for assistance with identifying a replacement part:
 - a) NUWC Fleet Readiness Action Team (FRAT)
 - b) EMO
 - c) 2mmtr_partshelp@us.navy.mil
 - d) Both A and C
- 6) What does the abbreviation MTRTS stand for?
 - a) Module Test and Repair Tracking System
 - b) Module Test and Repair Troubleshooting System
 - c) Module Testing and Repair Test Station
 - d) Module Testing and Repair Testing System
- 7) An analog signature is a display of the _____ (vertical axis) versus _____ (horizontal axis) interaction of a component.
 - a) current, voltage
 - b) voltage, current
 - c) voltage, resistance
 - d) current, resistance

- 8) The Most Descriptive Signature (MDS) of an inductor is:
- a) Surfboard
 - b) Lazy L
 - c) Ellipse
 - d) Vertical line
- 9) The **Scan** button on the Huntron Tracker is used to:
- a) Initiate the capture of a pin's signature.
 - b) Sequence through the four ranges.
 - c) Check the Tracker calibration for accuracy.
 - d) None of the above.
- 10) The following must be screened and documented in MTRTS:
- a) All CCA/EM, whether or not Gold Disk supported.
 - b) All attempted repair actions whether successfully repaired or not.
 - c) Gold Disk supported CCA/EM only.
 - d) Both A and B.
- 11) The Huntron Tracker diagnostics PMS check is run from the Huntron Workstation software and should be accomplished:
- a) Weekly
 - b) Monthly
 - c) Quarterly
 - d) Semi-annually
- 12) The signatures for reactive components are affected by changes in:
- a) Voltage
 - b) Frequency
 - c) Impedance
 - d) Both B and C
- 13) Which signature (below) displays the MDS of a Zener diode? _____





- 14) According to the Joint Fleet Maintenance Manual, throw away (non-DLR or FLR) CCAs are to be screened for repair.
- a) True
 - b) False
- 15) The MTR Dispatcher library can be searched by _____.
- a) Part Number and NIIN
 - b) System and APL
 - c) Test Routine Number
 - d) All of the above.
 - e) A and B only.
- 16) To prevent damage to devices to be tested, the Huntron Tracker has a maximum selectable test voltage of _____ V.
- 17) Graphics Viewer provides the technician with logistics information for both the CCA and CCA components.
- a) True
 - b) False
- 18) The Huntron Workstation software is required when troubleshooting a CCA using the Huntron Tracker.
- a) True
 - b) False
- 19) How often is the MTRTS backup sent in and to what email address?
- a) Quarterly / 2mtrdata@navy.mil
 - b) Quarterly / MTRhelp@navy.mil
 - c) Monthly / MTRhelp@navy.mil
 - d) Monthly / 2mtrdata@navy.mil
- 20) Draw the expected signature for the following schematic:



MTR Recertification Performance Test

NAME (Last, First, MI):

RATE:

ACTIVITY/COMMAND:

UIC:

PRD:

1. NAVSEA MTR technician has brought the latest copy of their MTRTS report _____
2. The MTR Technician must satisfactorily complete the following tasks:
 - a. Demonstrate ability to verify that current software is loaded on the Controller. Fill in each blank for latest software version.
_____ Huntron Workstation
_____ MTR Tracking System
_____ MTR Dispatcher
_____ DVD Test Routine Release number
_____ Anti-Virus (McAfee)

_____ Demonstrate knowledge of the program documentation located on the MTR Test Routine DVD-ROM.

_____ Demonstrate the ability to configure the Tools Options using Huntron Workstation software.

_____ Demonstrate the knowledge of AN/USM-674 or AN/USM-726 Diagnostics and the ability to accomplish the applicable PMS

_____ Load Databases into the MTR Dispatcher.

_____ Download a Test Routine from MTR Dispatcher.

_____ Troubleshoot a faulted circuit card assembly and identify the faulty component.

_____ Complete MTR Tracking System entry on faulted CCA.

_____ Complete MTR Tracking System entry with Recertifier provided scenarios.

_____ Create a MTRTS Backup File for submission to NUWC DET FEO Norfolk.
 - b. What e-mail address do you send the report to? _____

3. During the recertification, the technician observed all safety precautions and maintained a clean, orderly, and electrostatic discharge (ESD) safe work area. [SAT/UNSAT]

EVALUATION BY:

START DATE:

COMPLETION

DATE: OVERALL PERFORMANCE:

NOTES:

Original to: [Technician (Training Record)]

Copy to: [2M/MTR/FOTR Inspector or 2M/MTR Technician Recertifier]

Appendix F

2M/MTR/FOTR Workstation Checklist

1. If a 2M/MTR/FOTR item does not have an NSN and is not listed as open purchase, the item has been superseded and is no longer available through the supply system. These items are still valid for certification.
2. MOQ refers to the minimum order quantity of the item.
3. If a FOTR item does not have an NSN, refer to the reference number provided for the current NSWC Dahlgren Approved Tools List for sources of supply. A value of RPL refers to the NSWC Dahlgren Recommended Parts List. All NSWC Dahlgren lists are available from the NSWCD Dahlgren website.
<https://www.navsea.navy.mil/Home/Warfare-Centers/NSWC-Dahlgren/What-We-Do/Navy-Shipboard-Fiberoptics/>
4. Optional items are listed as Opt in their respective configuration.

NOMENCLATURE	NSN	P/N	Portable Kit	Mini	Micro
1. 2M HAZMAT					
ADHESIVE (Epoxy Patch Kit)	8040-00-061-8303	EPK 0151	1	1	1
ADHESIVE (Jumper Wire Bonding)	8040-01-148-9262	TAK-PAK 20419			Opt
CEMENT, Cyanoacrylate (Plastic Panel)	6520-01-378-8857	A744-1			Opt
CLEANER, Antistatic	6850-01-283-9966	6001		1	1
COMPOUND, Optical Lens Cleaner	6850-00-392-9751	AA59199-1	Opt	Opt	Opt
CONFORMAL COATING, Acrylic	5970-01-029-7961	1B31 1QT	1	1	1
CONFORMAL COATING, Polyurethane	5970-01-013-8611	1A33	1	1	1
CONFORMAL COATING, Silicone	5970-01-363-8394	DC-3140-MS-3	1	1	1
DESOLDERING WICK (#1)	3439-00-545-3396	80-1-5	3	3	3
DESOLDERING WICK (#2)	3439-01-324-8208	80-2-5	3	3	3
DESOLDERING WICK (#3)	3439-00-009-2334	80-3-5	1	1	1
DESOLDERING WICK (#5)	3439-01-009-6448	80-5-5			Opt
FLUX, Soldering	3439-00-069-5815	FORMULA 197 1QT		1	1
<u>OR</u> FLUX, Soldering (64 oz. bottle)	3439-01-459-2000	186		1	1
FLUX, Soldering (Flux Pen)	3439-01-510-2558	83-1000-0186	1	Opt	Opt
HAND LOTION, Static Dissipative	8510-01-492-3313	ICL-16-ESD	Opt	Opt	Opt
HEAT SINK COMPOUND	6850-01-143-4853	52022IJ	Opt	Opt	Opt
ISOPROPYL Alcohol, Technical (Quart)	6810-00-983-8551	TT-I-735	1	1	1
<u>OR</u> ISOPROPYL, Alcohol, Technical (Gallon)	6810-00-286-5435	TT-I-735A GRADE A	Opt	Opt	Opt
LUBRICATING OIL, Instrument	9150-00-664-6518	M6085-1		Opt	Opt
MINERAL OIL, USP	6505-01-573-2805	1000042665	1	1	1
PAINT, Black Acrylic (Lacquer)	8010-00-935-7078	P-898			Opt
PAINT, White Acrylic (Lacquer)	8010-00-165-6140	793716			Opt
RESIN, Acrylic, Dental	6520-01-061-0664	651011			Opt

NOMENCLATURE	NSN	P/N	Portable Kit	Mini	Micro
1. 2M HAZMAT (continued)					
SOLDER, Paste	3439-01-384-2071	3439-01-384-2071			Opt
<u>OR</u> SOLDER, Paste	3439-01-456-5438	615D			Opt
SOLDER, Tin Alloy (.015)	3439-01-510-5302	24-6337-9703	1	1	1
<u>OR</u> SOLDER, Tin Alloy (.015)	3439-01-008-7580	SN63WRMAP3 0.015	1	1	1
SOLDER, Tin Alloy (.025)	3439-01-664-3800	24-6337-9718	1	1	1
<u>OR</u> SOLDER, Tin Alloy (.028)	3439-01-008-7577	SN63WRMAP3 0.028	1	1	1
SOLDER, Tin Alloy (.031)	3439-01-510-6209	533-24-6337-9710	1	1	1
<u>OR</u> SOLDER, Tin Alloy (.036)	3439-01-008-7578	SN63WRMAP3 0.036	1	1	1
SOLDER, Tin Alloy (.062)	3439-01-664-3817	24-6337-9711	1	1	1
<u>OR</u> SOLDER, Tin Alloy (.063)	3439-00-473-2000	SN63WRMAP3 0.063	1	1	1
SOLDER, Tin Alloy (.090)	3439-01-146-6953	SN63WRMAP3 0.090	Opt	Opt	Opt
TOWELETTE CLEANING, Anti-Static Wipe	7920-01-295-8918	DCW	Opt	Opt	Opt

NOMENCLATURE	NSN	P/N	Portable Kit	Mini	Micro
2. 2M CONSUMABLES					
APPLICATOR, Disposable (Cotton Tipped)	6515-01-234-6838	36200	1	1	1
BAG, Plastic (Static Dissipative, 12 x 16)	8105-01-386-3868	3001216	3	3	3
BAG, Plastic (Static Dissipative, 8 x 10)	8105-01-386-3899	1001012	3	3	3
BAG, Plastic (Static Dissipative, 4 x 8 MOQ - 5)	8105-01-386-3874	7100408ZL	3	3	3
BLADE, Surgical Knife, Detachable (#11)	6515-00-660-0010	4-311	1	1	1
BLADE, Surgical Knife, Detachable (#15)	6515-00-660-0008	65150006600008	1	1	1
BOTTLE (16 oz. ESD Safe Water Bottle)	Open Purchase	WHB-16-ESD	Opt	Opt	Opt
BRUSH, Acid Swabbing	7920-00-514-2417	803-12	12	12	12
BRUSH, Bristle, Dental (Microchine)	6520-01-056-7376	16.574.1	1	1	1
BRUSH, Wire, 3/16" Heating Element	7920-01-364-1908	1127-0014-P5	1	1	1
BRUSH, Wire, 1/8" Heating Element	7920-00-018-7091	1127-0006-P5	1	1	1
BUR, Dental (#35 Inverted Cone)	6520-01-003-2267	14853	5	5	5
BUR, Dental, Ball Mill (#1/2 Straight)	6520-01-003-3132	14821	5	5	5
BUR, Dental, Ball Mill (#2 Straight)	6520-01-003-2269	14826	5	5	5
BUR, Dental, Ball Mill (#4 Straight)	6520-01-003-2270	14832	5	5	5
BUR, Dental, Ball Mill (#6 Straight)	6520-01-003-2271	14838	5	5	5
BUR, Dental, Ball Mill (#8 Straight)	6520-01-003-3131	14844	5	5	5
BUR, Dental (#559 Fissure Cutter)	6520-01-003-2260	14877	5	5	5
DEPRESSOR, Tongue (or equivalent)	6515-01-305-5120	3920-333	1	1	1
DISK, Abrasive (Silicon Carbide)	6520-00-523-2150	11.780	1	1	1
ERASER, Rubber (or equivalent)	7510-00-223-7046	70626	1	1	1
EYELET (CME15)	5325-00-139-0328	CME15	Opt	Opt	Opt
EYELET (CME26)	5325-00-234-7913	CME26C	1	1	1
EYELET (CME36)	5325-00-558-1785	CME36C	10	10	10

EYELET (CME46)	5325-01-076-9499	CME46C	10	10	10
NOMENCLATURE	NSN	P/N	Portable Kit	Mini	Micro

2. 2M CONSUMABLES (continued)

GLOVES, Disposable (Nitrile, Large)	8415-01-447-8212	8005L	1	1	1
<u>OR</u> GLOVES, Disposable (Nitrile, Medium)	8415-01-447-8213	8005M	1	1	1
<u>OR</u> GLOVES, Disposable (Nitrile, Small)	8415-01-447-8214	8005S	1	1	1
INSULATION SLEEVING (Kit)	5970-01-051-4706	12-1080	Opt	Opt	Opt
LABEL, ESD Warning, 2" X 2"	7690-01-077-4894	L81REV	1	1	1
<u>OR</u> LABEL, ESD Warning, 5/8" X 2"	Open Purchase	758ST0673	1	1	1
MAINTENANCE KIT (A.P.E. Track Repair Kit)	5895-01-136-2705	2570-0010	1	1	1
<u>OR</u> CIR-KIT (Pace Track Repair Kit)	4940-01-054-0041	6993-0037	1	1	1
ORANGEWOOD STICK (MOQ 2)	5120-01-596-0413	SH-83	1	1	1
PAPER, Abrasive (400 Grit Sandpaper)	5350-00-224-7201	P-P-101 400GR 9X11	1	1	1
PAPER, Abrasive (600 Grit Sandpaper)	5350-00-224-7215	P-P-101 600GR 9X11	1	1	1
PAPER, Lens	6640-00-240-5851	NNNP40	1	1	1
PARTS KIT (End of Conductor Track Repair Frames)	5999-01-110-2628	1200-0070-P1	Opt	Opt	Opt
SAW, Slotting (Rotary File)	3455-00-189-7191	1112-0061-P10	5	5	5
SPLICE, Conductor (Straight Conductor Track Repair Frames)	5940-01-156-4286	1200-0074-P1	Opt	Opt	Opt
STRIP, Metal (Copper Foil)	9535-00-268-9571	ASTM B152	1	1	1
<u>OR</u> FOIL, Metal (Thin Copper Foil)	9515-01-658-3007	CDA110SOFX1	1	1	1
TAPE, Pressure Sensitive (Polyimide)	7510-01-377-9992	5413	Opt	Opt	Opt
TAPE DOT (Jumper Wire Bonding)	Open Purchase	310-0651			Opt
TOOTHPICK (or equivalent)	7350-00-838-3919	R820SQ	1	1	1
TOWEL, Paper (Large Wiper)	7920-00-965-1709	34720	1	Opt	Opt
WHEEL, Abrasive (Rubber Knife Edge)	6520-00-523-1120	11.461	Opt	Opt	Opt
WIPE, Instrument (Small Tissue)	7920-01-108-7915	34155	1	1	1

NOMENCLATURE	NSN	P/N	Portable Kit	Mini	Micro
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3. 2M TOOLS

ANVIL, Jeweler's (MOQ-3)	5120-00-618-4913	12.312	1	1	1
BOTTLE, Applicator (Flux, Felt Tip)	8125-01-562-3877	FD-PEN-ESD		Opt	Opt
BOTTLE (Flux Dispenser, Straight Tip)	8125-01-562-3875	FD-2-ESD		1	1
BOX, Small Parts (ESD Safe)	8115-01-562-5722	C618		Opt	Opt
BRUSH, Artist's	8020-00-051-7098	1510-2		Opt	Opt
BRUSH, Bristle (Glass Tube)	7920-00-018-7052	1127-0002-P5	1	1	1
BRUSH, Scrub	7920-00-061-0037	365015	1	1	1
BRUSH, Wire, (Brass)	7920-01-604-3309	85056	1	1	1
BURNISHER, Dental (#26-27)	6520-01-055-5086	BB26/27S	1	1	1
CASE, Transit	Open Purchase	05-5379	1		
CARVER, Dental (Cleoid/Discoid #89-92)	6520-00-935-7254	2129	1	1	1
CARVER, Dental (Hollenback #1/2)	6520-00-935-7171	CVHL 1/2	1	1	1

CHISEL, Dental (#3/4)	6520-00-935-7179	CP3/4	1	1	1
NOMENCLATURE	NSN	P/N	Portable Kit	Mini	Micro
3. 2M TOOLS (continued)					
CHISEL, Dental (#23)	6520-01-529-8715	F23/23R	1	1	1
CLAMP, C (MOQ-9)	5120-00-596-4053	5120-00-596-4053	1	1	1
CLIP, Electrical (Heat Sink)	5999-00-677-9861	11066463-003	3	3	3
CUSHIONING MATERIAL (Narrow Foam Insert Set, 18" x 23.5")	8145-01-658-1436	09-8166		Opt	Opt
<u>OR</u> INSERT SET (Wide Foam 25" x 23.5")	5140-01-664-6056	09-7365		Opt	Opt
DESOLDERING TOOL (Manual Extractor)	3439-01-661-1985	T6103A		1	1
DISPENSER, Solvent, (ESD Safe)	6520-01-529-8711	SD-6-ESD-PP	1	1	1
DRILL SET, Twist (#61 to 80)	5133-00-449-6775	18103	1	1	1
DRILL, Twist (#50)	5133-00-189-9295	150 50	2	2	2
DRILL, Twist (#51)	5133-00-189-9296	150 51	2	2	2
DRILL, Twist (#52)	5133-00-189-9297	150 52	2	2	2
DRILL, Twist (#53)	5133-00-189-9298	150 53	2	2	2
DRILL, Twist (#54)	5133-00-189-9299	150 54	2	2	2
DRILL, Twist (#55)	5133-00-189-9300	150 55	2	2	2
DRILL, Twist (#56)	5133-00-189-9301	150 56	2	2	2
DRILL, Twist (#57)	5133-00-189-9302	150 57	2	2	2
DRILL, Twist (#58)	5133-00-189-9303	150 58	2	2	2
DRILL, Twist (#59)	5133-00-189-9304	150 59	2	2	2
DRILL, Twist (#60)	5133-00-189-9305	150 60	2	2	2
EXPLORER, Dental (#23)	6520-00-528-1000	EXS23	1	1	1
EXPLORER, Dental (#6)	6520-00-528-0000	EXS6	1	1	1
FILE, Bone	6520-00-528-5050	1003574	1	1	1
FILE SET, Hand	5110-01-430-6833	S475	1	1	1
FIXTURE, Lighting (Sunnex)	6210-01-127-5432	HT302-20	1		
BASE, C-Clamp (SUNNEX®)	Open Purchase	C-Clamp Base	1		
LAMP, Incandescent	6240-01-074-4599	20T3Q/CL/AX	1		
GAGE, Compound Pressure/Vacuum	6685-00-248-6975	046646A	1	1	1
ADAPTER, Gage, Brass	4730-01-203-8069	1066X4X4	1	1	1
GAGE, Twist Drill (#1 to 60)	5210-00-221-1893	PD5210-00-221-1893	1	1	1
GAGE, Twist Drill (#61 to 80 MOQ-5)	5210-00-555-7993	5054	1	1	1
GOGGLES, Industrial	4240-01-063-5996	GG-G-531	1	1	1
HAMMER, Hand (MOQ-3)	5120-00-061-8540	B107.400	1	1	1
HANDLE, Surgical Knife, Detachable Blade	6515-00-344-7920	10-0009	1	1	1
<u>OR</u> HANDLE, Surgical Knife (Safety Handle)	6515-01-590-0119	2200	1	1	1
<u>OR</u> KNIFE, General Surg (#11 Retractable) Non-replaceable blade, disposable only	6515-01-668-7872	501338	1	1	1
<u>OR</u> KNIFE, General Surg (#15 Retractable) Non-replaceable blade, disposable only	6515-01-668-5279	501339	1	1	1
HOLDER, CCA (Hakko Omnivise)	5998-01-630-0771	C1390C		Opt	Opt
HOLDER, Circuit Board	5999-01-184-2449	333		1	1

<u>OR</u> HOLDER, Electrical Card	5998-01-174-3157	315	1		
NOMENCLATURE	NSN	P/N	Portable Kit	Mini	Micro
3. 2M TOOLS (continued)					
LIGHT, Desk (Blue Gooseneck)	6230-01-033-2081	221217		1	1
LAMP, Incandescent (Spot)	6240-01-029-5988	15R14SC/SP		1	1
<u>OR</u> LIGHT, Fiber Optic (Techniquip old)		TQ-FOI		1	1
LAMP, Halogen, 21V/150W	6240-01-331-0841	EKE		1	1
<u>OR</u> LIGHT, Fiber Optic (Fostec)		20500		1	1
LAMP, Halogen, 20V/150W	6240-01-083-5851	DDL		1	1
<u>OR</u> LIGHT, Fiber Optic (Stocker-Yale)		21AS1K100X		1	1
LAMP, Halogen, 21V/150W	6240-01-331-0841	EKE		1	1
<u>OR</u> LIGHT, Fiber Op (Techniquip new)	6035-01-586-5420	21AC1K200X		1	1
LAMP, Halogen, 21V/150W	6240-01-331-0841	EKE		1	1
LIGHT, MICROSCOPE (Lightpipe)	6650-01-562-4051	*DG27024G		1	1
LENS, Spot Focus, Fiber Optic	6650-01-562-4044	*30123400		2	2
LIGHT, Fluorescent (Workbench)	Open Purchase	FL04807200		Opt	Opt
LIGHT, LED (Ring Light)	6210-01-629-9076	LV2000-B		Opt	Opt
MAT, ESD (Soft)	5920-01-169-1322	8900		1	1
<u>OR</u> MAT, ESD (Rigid) 24"x36"	5920-01-562-3870	SCS-72689		1	1
<u>OR</u> MAT, ESD (Rigid) 24"x48"	5920-01-491-3495	SCS-72668		1	1
METER (ESD Constant Monitor)	6625-01-491-0711	720 Series		1	1
MICROSCOPE (Meiji)	6650-01-553-0721	3917AS100-1		1	1
BOOT, Rubber (Eye shield)	5975-01-581-3788	MA600		2	2
EYEPIECE	6650-01-619-7186	MA502		2	2
FOCUS BLOCK	6650-01-562-4031	7777*MEIJI-F		1	1
LENS (Auxiliary, 0.5X)	6650-01-562-4042	MA517		Opt	1
LENS (Protective Glass Objective)	6650-01-619-8371	MA531		1	1
<u>OR</u> MICROSCOPE (OC White)	Open Purchase	PZ-WF10		1	1
BOOT, Rubber (Eye shield)	Open Purchase	PZ-OB-100		2	2
FOCUS BLOCK	Open Purchase	PZ-FA20		1	1
EYEPIECE	Open Purchase	PZWF10		2	2
LENS (Auxiliary, 0.5X)	Open Purchase	PZ-OB-050		1	1
LENS (Protective Glass Objective)	Open Purchase	PZ-OB-100		1	1
BOOM STAND (Dual Arm, Ball Bearing)		SMS6B		1	1
MOUNT, Tilting		15133		1	1
<u>OR</u> STAND, Articulating Arm	Open Purchase	18202		Opt	Opt
MICROSCOPE, Meiji MMDT	6650-01-552-9038	3918AS100-1		Opt	Opt
MICROSCOPE, OC White MMDT	Open Purchase	PZT-6.5		Opt	Opt
CAMERA, Video, HD (HDMI, C-Mount)	Open Purchase	14305		Opt	Opt
COUPLER, C-Mount	Open Purchase	PZ-CD03		Opt	Opt
LENS (Protective Glass Objective)	Open Purchase	PZ-OB-100		Opt	Opt
LENS (Auxiliary 0.5X)	Open Purchase	PZ-OB-050		Opt	Opt
MONITOR, LCD	Open Purchase	15HD7		Opt	Opt

MIXING SLAB, Dental (Glass)	6520-00-556-2000	27.220	1	1	1	
NOMENCLATURE	NSN	P/N	Portable Kit	Mini	Micro	
3. 2M TOOLS (continued)						
PLIERS (Angled Flush Cut MOQ - \$375)		5110-01-520-5185	Q-6257	1	1	1
<u>OR</u> PLIERS (Angled Flush Cut)	Open Purchase	5072	1	1	1	
PLIERS (Combo, Round/Flat)	5110-01-513-4297	Q-6255	Opt	Opt	Opt	
<u>OR</u> PLIERS (Combo, Round/Flat)	Open Purchase	533-US	Opt	Opt	Opt	
PLIERS, Diagonal Cutting (Utility MOQ-2)	5110-01-083-9317	D209-5C	1	1	1	
PLIERS (Flush Cut, 4")	5110-01-524-7565	Q-6256	1	1	1	
<u>OR</u> PLIERS (Flush Cut, 4")	Open Purchase	7223	1	1	1	
PLIERS (Micro Duckbill)	5120-01-028-7102	46.0281	1	1	1	
<u>OR</u> PLIERS (Micro Duckbill)	5120-01-672-5441	2642	1	1	1	
PLIERS (Micro Round Nose MOQ -3)	5120-00-239-8252	PL-291	Opt	Opt	Opt	
PLIERS (Needle Nose, Smooth Jaw)	5120-01-513-9587	Q-6258	1	1	1	
<u>OR</u> PLIERS (Needle Nose, Smooth Jaw)	Open Purchase	511	1	1	1	
PLIERS (Round Nose MOQ-3)	5120-00-126-2076	RN54	Opt	Opt	Opt	
POWER STRIP, Electrical Outlet	6150-01-362-7192	Z6-62P		Opt	Opt	
PUNCH, Center, Solid	5120-01-041-1613	264C	1	1	1	
PUNCH, Drive Pin (1/4")	5120-00-240-6083	565G	1	1	1	
PUNCH, Drive Pin (5/32")	5120-00-240-6104	565D	1	1	1	
ROTARY TOOL KIT (Dremel MOQ-2)	5130-01-520-4703	7300-N/8	1			
RULE, Machinist's	5210-00-234-5223	676	1	1	1	
<u>OR</u> RULE, Pocket	5210-00-362-5100	300ME	Opt	Opt	Opt	
SCISSORS, General Surgical	6515-00-365-1200	103-2	1	1	1	
SCREWDRIVER, Flat Tip	5120-01-592-8837	1100-0230-P1	1	1	1	
SCREWDRIVER SET, Jeweler's	5120-01-353-6801	66-039	Opt	Opt	Opt	
SHAFT, Rotary Tool (Mandrel)	3040-00-172-5415	1115-0001-P10	1	1	1	
<u>OR</u> MANDREL, Dental Handpiece	6520-01-568-0437	DM303HP	1	1	1	
PLATE, Instruction (ESD Sign MOQ-7)	9905-01-342-3044	3870-1		1	1	
SPATULA, Dental (#324)	6520-00-556-8000	CS324	1	1	1	
SPECTACLES, Industrial	4240-01-140-0282	S0250X	1	1	1	
SPUDGER	5120-01-514-7806	SH-81	1	1	1	
STONE, Sharpening (MOQ-31)	5345-01-513-8429	HB13T	1	1	1	
STRAP, Wrist ESD (Plastic Dual Conductor)	5920-01-491-3509	4720		1	1	
<u>OR</u> STRAP, Wrist ESD (Metal, LG, Dual)	5920-01-692-4882	2386		Opt	Opt	
<u>OR</u> STRAP, Wrist ESD (Metal, MD, Dual)	5920-01-692-4870	2385		Opt	Opt	
<u>OR</u> STRAP, Wrist ESD (Metal, SM, Dual)	5920-01-692-4865	2384		Opt	Opt	
CORD, ESD (Dual Wrist Strap)	5999-01-491-7014	2360		1	1	
STRIPPER, Wire, Hand (MOQ - \$375)	5110-01-090-5870	45-187	1	1	1	
BLADE SET, Wire Stripper	5110-01-380-9346	L-5560	1	1	1	
TIP CLEANER KIT	3439-01-483-2145	6993-0200-P1	1	1	1	
TIP TOOL, Thermal Handpiece (MOQ-6)	5120-01-373-3722	1100-0206	1	1	1	

TERMINAL BOX (Small Parts Box, ESD Safe)	5940-01-551-8235	C601		Opt	Opt
NOMENCLATURE	NSN	P/N	Portable Kit	Mini	Micro
3. 2M TOOLS (continued)					
TWEEZERS (Antiwicking AWG18)	5120-00-954-1265	AWG18	*1	*1	*1
TWEEZERS (Antiwicking AWG20 MOQ - 2)	5120-00-954-1269	AWG20	*1	*1	*1
TWEEZERS (Antiwicking AWG22)	5120-00-954-1270	AWG22	*1	*1	*1
TWEEZERS (Antiwicking AWG24 MOQ - 2)	5120-00-954-1272	46082	*1	*1	*1
TWEEZERS (Curved Point)	5120-01-520-5184	7SA	1	1	1
TWEEZERS (Self Closing)	5120-01-336-4149	57.753	1	1	1
WISE, Multiposition (Vacuum Base)	5120-01-488-5048	381	1	1	1
<u>OR</u> WISE, Multiposition	5120-00-991-1907	301	1	Opt	Opt
MOUNT, Wise (Round Tray Base)	5120-01-167-1133	312	Opt	Opt	Opt
WISE, Pin	5120-01-367-7116	165	1	1	1
<u>OR</u> WISE, Pin (MOQ – 6)	5120-00-595-8467	58.215	1	1	1
WORKBENCH ASSEMBLY (or equivalent)	7125-01-684-8454	SVSV-72INLB		1	1
WORKSTATION KIT, ESD (Portable)	5920-01-512-3815	16475	1	Opt	Opt

*Government Furnished Material (GFM)

NOMENCLATURE	NSN	P/N	Portable Kit	Mini	Micro
4. 2M SUPPORT EQUIPMENT					
SOLDERING STATION (ST-25)	3493-01-576-6864	8007-0528		Opt	Opt
BAG, Tool (MOQ – 2)	5140-01-590-3955	71787-2N09		Opt	Opt
CABLE, Elec, (Universal Power Cord)	6145-01-398-0392	1332-0094-P1		Opt	Opt
SOLDERING STATION (MBT-250)	3439-01-377-7760	8007-0203	1		
CABLE, Power (Universal Power Cord)	6145-01-398-0392	1332-0094-P1	1		
FUSE, CART. 2.0 Amp, Slo-Blo	Open Purchase	1159-0247-P5	1		
MANUAL (PACE Tip & Temp Chart)	7610-01-423-7309	5050-0251	Opt		
HOLDER (PACE Temp & Temp Chart)	6625-01-500-0251	1257-0186	Opt		
MOTOR, A/C (Vacuum/Pressure Pump)	6105-01-400-4194	6993-0188	Opt		
O-RING	5331-00-676-6184	2-101E515-80	Opt		
PUMP REBUILD KIT, Vacuum/Pressure	Open Purchase	6993-0190	Opt		
VISIFILTER, External	4430-01-148-9052	1309-0028-P1	1		
FILTER, Visifilter Paper Element	4330-01-148-7954	1309-0027-P10	1		
VISIFILTER, Internal	4430-01-149-0247	1309-0020-P1	Opt		
POWER SUPPLY (PPS-400, PRC-2000)	6130-01-407-1338	7008-0187		1	1
BRAZING/SLDRNG SET (SMR Cubby Kit)	3439-01-383-1855	6019-0022-P1		Opt	Opt
CABLE ASSY (Pulse Heat Power Cord)	6150-01-227-5907	7000-0023		1	1
CABLE, Power (Universal Power Cord)	6145-01-398-0392	1332-0094-P1		1	1
FUSE, Cartridge (12.0 Amp)	5920-01-412-7761	1159-0257-P5		1	1
FUSE, Cartridge (5.0 Amp, SLO-BLO)	5920-01-408-9839	1159-0253-P5		1	1
HANDLE (Handpiece Redi-Rak)	3439-01-380-8678	6019-0023-P1		1	1

HOLDRE (Soldering Tip Redi-Rak)	3439-01-353-4357	6021-0007-P1	1	1	
MANUAL (PACE Tip & Temp Chart)	7610-01-423-7309	5050-0251	Opt	1	
HOLDER (PACE Temp & Temp Chart)	6625-01-500-0251	1257-0186	Opt	Opt	
NOMENCLATURE	NSN	P/N	Portable Kit	Mini	Micro
4. 2M SUPPORT EQUIPMENT (continued)					
O-RING	5331-00-676-6184	2-101E515-80		Opt	Opt
MOTOR, A/C (Paste Dispenser Pump)	6105-01-400-4189	1336-0027-P1		Opt	Opt
MOTOR, A/C (Vacuum/Pressure Pump)	6105-01-400-4194	6993-0188		Opt	Opt
PIK PUMP (Pik-Vac Pump)	4940-01-424-3212	1334-0021-P1		Opt	Opt
PUMP REBUILD KIT, Vacuum/Pressure	Open Purchase	6993-0190-P1		Opt	Opt
SWITCH, Foot (Foot Pedal)	5930-01-301-3563	6008-0115-P1		1	1
VISIFILTER, External	4430-01-148-9052	1309-0028-P1		1	1
FILTER, Visifilter Paper Element	4330-01-148-7954	1309-0027-P10		1	1
VISIFILTER, Internal	4430-01-149-0247	1309-0020-P1		Opt	Opt
SOLDERING IRON (PS-80)	3439-01-398-2750	6993-0199-P1	1	1	1
<u>OR</u> HEATING UNIT (PS-90 Soldering Iron)	3439-01-567-8016	6010-0131-P1	1	1	1
HEATING UNIT (PS-80/90 Heater Assy)	3439-01-465-4479	6010-0095-P1	Opt	Opt	Opt
HOLDER (PS-80 Hot Cubby)	3439-01-465-4480	6019-0050-P1	1	1	1
<u>OR</u> HOLDER (PS-90 Hot Cubby)	3439-01-510-8359	6019-0064-P1	1	1	1
SPONGE (PS-80/90 Hot Cubby)	7920-01-406-2958	4021-0008-P3	1	1	1
<u>OR</u> HOLDER (New PS-90 Hot Cubby)	3439-01-576-6957	6019-0081-P1	1	1	1
PAD (Sponge, New PS-90 Hot Cubby)	3439-01-660-3917	4021-0013-P5	1	1	1
WOOL (Brass Tip Cleaner MOQ-87)	5350-01-595-9296	1129-0018-P1	Opt	Opt	Opt
SCREW, Machine (Set Screw)	5305-01-343-6739	1348-0547-P10	2	2	2
STRAP, ESD (Velcro 10")	Open Purchase	VSI-10ESD	Opt	Opt	Opt
TIP, Soldering Iron (1/8" Chisel)	3439-01-378-7161	1121-0337-P5	1	1	1
TIP, Soldering (1/8" Chisel, Thermodrive)	3439-01-468-7800	1121-0518-P5	Opt	Opt	Opt
TIP, Soldering Iron (1/16" Chisel)	3439-01-380-8651	1121-0414-P5	1	1	1
TIP, Solder (1/16" Chisel Thermodrive)	3439-01-511-1064	1121-0510-P5	Opt	Opt	Opt
TIP, Soldering (1/16" Chisel Ext Reach)	3439-01-396-0276	1121-0499-P5	Opt	Opt	Opt
TIP, Soldering (1/16" Chisel, Microfine)	3439-01-353-4375	1121-0349-P5	Opt	Opt	Opt
TIP, Soldering (1/16" Bent Chisel, Ext Reach)	Open Purchase	1121-0500-P5	Opt	Opt	Opt
TIP, Soldering Iron (3/32" Chisel)	3439-01-393-3029	1121-0360-P5	1	1	1
<u>OR</u> TIP, Solder (3/32" Chisel, Ext Reach)	3439-01-500-0248	1121-0529-P5	1	1	1
TIP, Soldering Iron (3/16" Chisel)	3439-01-432-0679	1121-0358-P5	Opt	Opt	Opt
TIP, Soldering Iron (1/32" Conical)	3439-01-387-7688	1121-0336-P5	1	1	1
TIP, Solder Iron (Sharp Bent Conical)	3439-01-562-3905	1121-0830-P5	Opt	Opt	Opt
TIP, Soldering Iron (Bent Conical)	Open Purchase	1121-0526-P5	Opt	Opt	Opt
TIP, Soldering Iron (0.4" Knife Tip)	3439-01-376-8025	1121-0305-P1			1
<u>OR</u> TIP, Soldering Iron (0.25" Knife Tip)	3439-01-376-8024	1121-0402-P1			1
TIP, Soldering Iron (SOT Tip)	3439-01-376-8023	1121-0304-P1			1
TIP, Soldering Iron (Small Chip Tip)	3439-01-353-4373	1121-0302-P1			1
TIP, Soldering Iron (Large Chip Tip)	3439-01-353-4374	1121-0303-P1			1

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TIP, Soldering Iron (Single Sided Chisel)	3439-01-400-1289	1121-0406-P5			1
<u>OR</u> TIP (Single Sided Chisel, Ext Reach)	3439-01-511-1065	1121-0532-P5			1
TIP, Soldering Iron (MiniWave)	3439-01-562-3908	1121-0490-P5			1
NOMENCLATURE	NSN	P/N	Portable Kit	Mini	Micro
4. 2M SUPPORT EQUIPMENT (continued)					
TIP, Soldering Iron (Angled MiniWave)	6515-01-529-8701	1121-0610-P5			1
TIP, Soldering Iron (SOIC14 Tunnel Tip)	3439-01-353-4367	1121-0391-P1			1
TIP, Soldering Iron (SOIC20 Tunnel Tip)	3439-01-353-4370	1121-0394-P1			1
DESOLDERING TOOL (SX-70 Extractor)	3439-01-348-8883	6010-0077-P1	1	1	1
CLAMP, Power Cord (Wire/Tube Holder)	4730-01-398-8488	1321-0085-01-P6	1	1	1
CONNECTOR (Female Quick Disconnect)	5935-01-393-3037	1259-0086-P1	1	1	1
CONNECTOR (Male Quick Disconnect)	5935-01-393-3036	1259-0087-P1	2	2	2
HEATING UNIT (SX-70 Heater Assy)	3439-01-390-6746	6010-0080-P1	1	1	1
PIPE, Plastic (54" Black Silicon Tubing)	4710-01-551-8227	1342-0015-08-P1	1	1	1
SCREW, Machine (Set Screw)	5305-01-343-6739	1348-0547-P10	1	1	1
SEAL (SX-70 Front Seal)	5330-01-191-2220	1213-0033-P1	1	1	1
SOLDERING STATION (SX-70 Hot Cubby)	3439-01-398-2749	6019-0044	1	1	1
SPONGE (SX-70 Hot Cubby Sponge)	7920-01-406-2958	4021-0008-P3	1	1	1
STRAP, ESD (Velcro 10")	Open Purchase	VSI-10ESD	Opt	Opt	Opt
TIP (SX-70, .030 ID)	3439-01-376-8029	1121-0367-P5	1	1	1
TIP (SX-70, .040 ID)	3439-01-376-8030	1121-0342-P5	1	1	1
TIP (SX-70, .060 ID)	3439-01-380-8647	1121-0368-P5	1	1	1
TUBE, Glass (SX-70)	9340-01-325-6184	1265-0009-P1	1	1	1
BAFFLE (SX-70 Glass Tube)	3439-00-248-5263	4010-0033	1	1	1
FILTER (SX-70 Glass Tube)	4470-01-075-6620	6700-3100	1	1	1
TUBING (Clear 1" PVC)	4720-01-408-6364	1325-0003-07-P1	1	1	1
<u>OR</u> DESOLDERING TOOL (SX-80 Extractor)	3439-01-476-0901	6010-0106-P1	1	1	1
CLAMP, Power Cord (Wire/Tube Holder)	4730-01-398-8488	1321-0085-01-P6	1	1	1
CONNECTOR (Female Quick Disconnect)	5935-01-393-3037	1259-0086-P1	1	1	1
CONNECTOR (Male Quick Disconnect)	5935-01-393-3036	1259-0087-P1	2	2	2
FILTER (SX-80/90/100 Glass Tube Filter)	3439-01-552-0319	1309-0018-P10	1	1	1
PIPE, Plastic (54" Black Tubing)	4710-01-476-9807	1342-0015-08	1	1	1
POSITIONER (SX-80/90/100 Hot Cubby)	3436-01-565-3830	Superseded	1	1	1
SPONGE (SX-80/90/100 Hot Cubby)	7920-01-406-2958	4021-0008-P3	1	1	1
<u>OR</u> POSITIONER (New SX-80/90/100 Cubby)	3436-01-565-3830	6019-0082-P1	1	1	1
PAD, Wiping (New SX-80/90/100 Cubby Sponge)	3439-01-660-3917	4021-0013-P3	1	1	1
WOOL, (Brass Tip Cleaner MOQ – 87)	5350-01-595-9296	1129-0018-P1	Opt	Opt	Opt
SCREW, Machine (Set Screw)	5305-01-343-6739	1348-0547-P10	1	1	1
STRAP, ESD (Velcro 10")	Open Purchase	VSI-10ESD	Opt	Opt	Opt
SURFACE PLATE, Heater (SX-80 Black Connector Heater Assy)	3439-01-496-8546	6010-0107-P1	Opt	Opt	Opt
SEAL (SX-80/90/100 Front Seal)	5330-01-510-2452	1213-0087-P1	Opt	Opt	Opt
SEAL (SX-80/90/100 Rear Seal)	5330-01-510-2455	1213-0086-P1	Opt	Opt	Opt

SOLDERING AID TOOL (SX .040 End. Tip)	3439-01-479-4488	1121-0624-P5	1	1	1
SOLDERING AID TOOL (SX .060 End. Tip)	3439-01-479-4489	1121-0626-P5	1	1	1
STRAINER, Suction (SX-80/90/100 V Baffle)	4730-01-509-7620	4010-0115-P2	1	1	1
NOMENCLATURE	NSN	P/N	Portable Kit	Mini	Micro
4. 2M SUPPORT EQUIPMENT (continued)					
TIP (SX-80 .020 Precision Tip)	3439-01-511-1037	1121-0681-P5	1	1	1
TIP (SX-80 .040 Precision Tip)	3439-01-511-1040	1121-0683-P5	1	1	1
TUBING (Clear 1" PVC)	9330-01-408-6364	1325-0003-07-P1	2	2	2
TUBING, Glass (SX-80/90/100 Glass Tube)	9340-01-510-9197	1265-0011-P1	1	1	1
WELDING ASSY KIT (SX-80/90/100 Glass Tube Kit)	3439-01-510-9227	6000-0212-P1	1	1	1
OR DESOLDEIRNG TOOL (SX-90/100 Extractor)	3439-01-476-0901	6010-0106-P1	1	1	1
CLAMP, Power Cord (Wire/Tube Holder)	4730-01-398-8488	1321-0085-01-P6	1	1	1
CONNECTOR (Female Quick Disconnect)	5935-01-393-3037	1259-0086-P1	1	1	1
CONNECTOR (Male Quick Disconnect)	5935-01-393-3036	1259-0087-P1	2	2	2
FILTER (SX-80/90/100 Glass Tube Filter)	3439-01-552-0319	1309-0018-P10	2	2	2
PIPE, Plastic (54" Black Tubing)	4710-01-476-9807	1342-0015-08	1	1	1
POSITIONER (SX-80/90/100 Hot Cubby)	3436-01-565-3830	Superseded	1	1	1
SPONGE (SX-80/90/100 Hot Cubby)	7920-01-406-2958	4021-0008-P3	1	1	1
OR POSITIONER (New SX-80/90/100 Cubby)	3436-01-565-3830	6019-0082-P1	1	1	1
PAD, Wiping (New SX-80/90/100 Cubby Sponge)	3439-01-660-3917	4021-0013-P3	1	1	1
WOOL, (Brass Tip Cleaner MOQ – 87)	5350-01-595-9296	1129-0018-P1	Opt	Opt	Opt
SCREW, Machine (Set Screw)	5305-01-343-6739	1348-0547-P10	1	1	1
SEAL (SX-80/90/100 Front Seal)	5330-01-510-2452	1213-0087-P1	Opt	Opt	Opt
SEAL (SX-80/90/100 Rear Seal)	5330-01-510-2455	1213-0086-P1	Opt	Opt	Opt
STRAINER, Suction (SX-80/90/100 V Baffle)	4730-01-509-7620	4010-0115-P2	1	1	1
STRAP, ESD (Velcro 10")	Open Purchase	VSI-10ESD	Opt	Opt	Opt
SURFACE PLATE (SX-90/100 Black Connector Heater Assy)	3439-01-496-8546	6010-0107-P1	Opt	Opt	Opt
TIP (SX-90/100 .020 ID Precision)	3439-01-571-1446	1121-0946-P5	1	1	1
TIP (SX-90/100 .030 ID Thermodrive)	3439-01-571-1415	1121-0930-P5	1	1	1
TIP (SX-90/100 .030 ID, Thermomax)	3439-01-626-5329	1121-0938-P5	Opt	Opt	Opt
TIP (SX-90/100 .040 ID Thermodrive)	3439-01-564-4999	1121-0931-P5	1	1	1
TIP (SX-90/100 .040 ID, Thermomax)	3439-01-589-7510	1121-0939-P5	Opt	Opt	Opt
TIP (SX-90/100 .040 ID Precision)	3439-01-571-1449	1121-0948-P5	1	1	1
TIP (SX-90/100 .050 ID, Thermodrive)	3439-01-626-0045	1121-0934-P5	Opt	Opt	Opt
TIP (SX-90/100 .060 ID Thermodrive)	3439-01-571-1420	1121-0932-P5	1	1	1
TIP (SX-90/100 .060 ID, Thermomax)	3439-01-626-5328	1121-0940-P5	Opt	Opt	Opt
TIP (SX-90/100 .060 ID Precision)	3439-01-589-6984	1121-0944-P5	Opt	Opt	Opt
TIP (SX-90/100 .090 ID Thermodrive)	3439-01-589-6945	1121-0933-P5	Opt	Opt	Opt
TIP (SX/PS TQFP-28 Box Tip)	Open Purchase	1121-0571-P1			Opt
TIP (SX/PS TQFP-32 Box Tip)	Open Purchase	1121-0572-P1			Opt
TIP (SX/PS TQFP-40 Box Tip)	Open Purchase	1121-0574-P1			Opt

TIP (SX/PS TQFP-52 Box Tip)	Open Purchase	1121-0573-P1			Opt
TIP (SX/PS TQFP-80 Box Tip)	Open Purchase	1121-0575-P1			Opt
TIP (SX/PS TQFP-80/100 Box Tip)	Open Purchase	1121-0603-P1			Opt
NOMENCLATURE	NSN	P/N	Portable Kit	Mini	Micro
4. 2M SUPPORT EQUIPMENT (continued)					
TIP (SX/PS TQFP-100 Box Tip)	3439-01-669-3214	1121-0576-P1			Opt
TIP (SX/PS TQFP-112 Box Tip)	Open Purchase	1121-0605-P1			Opt
TIP (SX/PS TQFP-144 Box Tip)	Open Purchase	1121-0604-P1			Opt
TUBING (Clear 1" PVC)	9330-01-408-6364	1325-0003-07	2	2	2
TUBING, Glass (SX-80/90/100 Glass Tube)	9340-01-510-9197	1265-0011-P1	1	1	1
WELDING ASSY KIT (SX-80/90/100 Glass Tube Kit)	3439-01-510-9227	6000-0212-P1	1	1	1
SOLDERING IRON (LF-15 LapFlo Tool)	3439-01-354-3448	7013-0004-02-P1		1	1
BLADE, Straight (LapFlo Blade Tip)	3439-01-151-2626	6000-0009-P1		1	1
TIP, LapFlo (Single Point Tip)	Open Purchase	6000-0008		1	1
HANDLE, Electric (MC-65 Microchine)	3439-01-383-1037	7026-0001-P1		1	1
LEAD (Probe Brake Patch Cord)	6625-01-406-7807	1332-0159		1	1
RESISTWEEZ ASSY (TW-15)	3439-00-155-4597	7009-0005-P1		1	1
KIT, Guide Block	3439-01-481-1797	6993-0105-P1		1	1
SCREW, Machine (Set Screw)	5305-01-399-3860	1405-0182		2	2
TIP (TW-15 Flat Tips)	3439-01-408-1710	1121-0006-P2		1	1
OR TIP (TW-15 Tapered Flat Tips)	3439-01-376-8027	1121-0301-P1		1	1
HANDLE, Thermal (TS-15 Striptweez Handpiece)	3439-01-399-4906	7012-0002-P1		1	1
BLADE(S), Thermal Striper (Installed)	4730-01-398-8488	1121-0003-P2		1	1
KIT, Guide Block	5935-01-393-3036	6993-0105-P1		1	1
SCREW (Set Screw w/Washer)	3439-01-391-7745	1405-0106-P5		4	4
SOLDERING IRON (TJ-70 ThermoJet)	4710-01-476-9807	7023-0002-P1	1	1	1
CLAMP, Power Cord (Wire/Tube Holder)	3436-01-565-3830	1321-0085-01-P6	1	1	1
CONNECTOR (Male Quick Disconnect)	7920-01-406-2958	1259-0087-P1	1	1	1
HEATING UNIT (TJ-70 Heater Assy)	3436-01-565-3830	6010-0084-P1	Opt	Opt	Opt
PIPE, Plastic (54" Black Tubing)	3439-01-399-4906	1342-0015-08	1	1	1
POSITIONER (SX-80/90/100 Hot Cubby)	4730-01-398-8488	Superseded	1	1	1
SPONGE (SX-80/90/100 Hot Cubby)	5935-01-393-3036	4021-0008-P3	1	1	1
OR POSITIONER (New SX-80/90/100 Cubby)	3439-01-391-7745	6019-0082-P1	1	1	1
PAD, Wiping (New SX-80/90/100 Cubby Sponge)	3439-01-660-3917	4021-0013-P3	1	1	1
WOOL, (Brass Tip Cleaner MOQ – 87)	5350-01-595-9296	1129-0018-P1	Opt	Opt	Opt
SCREW, Machine (Set Screw)	5305-01-343-6739	1348-0547-P10	1	1	1
STRAP, ESD (Velcro 10")	Open Purchase	VSI-10ESD	Opt	Opt	Opt
TIP (Single Curved Tip)	3439-01-398-2746	1121-0338-P1	1	1	1
TIP (Double Bent Tip)	3439-01-383-1859	1121-0330-P1			1
TIP (Single Flat Tip)	3439-01-380-8934	1121-0371-P1			1
TIP (Single Straight Tip)	3439-01-380-8853	1121-0366-P1			1

SOLDERING PLIERS (TT-65 Thermotweez Handpiece)	3439-01-381-6323	7025-0001-P1			1
DESOLDERING TOOL (PLCC-44 Box Tip)	3439-01-386-6118	1121-0318-P1			1
NOMENCLATURE	NSN	P/N	Portable Kit	Mini	Micro

4. 2M SUPPORT EQUIPMENT (continued)

HEATING UNIT (Heater Assy w/Sensor)	3439-01-406-7311	6010-0082-P1			Opt
HEATING UNIT (Heater Assy w/o Sensor)	3439-01-406-7312	6010-0083-P1			Opt
HOLDER (TT-65 Hot Cubby)	3439-01-381-6124	6019-0046			1
SPONGE (TT-65 Cubby)	7920-01-406-2958	4021-0008-P3			1
<u>OR</u> HOLDER TT65 (New TT-65 Cubby)	4920-01-644-1945	6019-0083-P1			1
SPONGE (New TT-65 Cubby)	3439-01-660-3917	4021-0013-P5			1
SCREW, Machine (Set Screw)	5305-01-343-6739	1348-0547-P10			2
STRAP, ESD (Velcro 10")	Open Purchase	VSI-10ESD	Opt	Opt	Opt
TIP (Tip Alignment Tool)	3439-01-408-0331	1100-0234-P1			1
TIP (1/64" Angled Conical Tips)	3439-01-457-8626	1121-0517-P1			1
TIP (Chip Removal, 0.08" Blade Tips)	3439-01-376-8038	1121-0313-P1			1
TIP (Angled Chip R, 0.10" Blade Tips)	3439-01-562-3921	1121-0436-P1			1
TIP (Chip Removal, 0.16" Blade Tips)	3439-01-381-6215	1121-0399-P1			1
TIP (0.40" Blade Tips)	3439-01-457-8625	1121-0514-P1			Opt
TIP (0.50", Blade Tips)	3439-01-457-8629	1121-0473-P1			1
TIP (0.70 SOJ/SIMM Removal Blade Tips)	3439-01-376-8028	1121-0416-P1			1
TIP (1.0 Blade Tips)	3439-01-457-8630	1121-0448-P1			Opt
TIP (0.27 X 0.27, PLCC-20, Box Tip)	3439-01-383-1671	1121-0316-P1			1
TIP (0.37 X 0.37, PLCC-28, Box Tip)	3439-01-376-8040	1121-0317-P1			1
TIP (0.26 X 0.26, Box Tip)	3439-01-399-4904	1121-0417-P1			1
TIP (0.40 X 0.35, Box Tip)	3439-01-399-4905	1121-0425-P1			1
TIP (0.35 X 0.25, LCCC-24, Box Tip)	3439-01-399-4143	1121-0452-P1			1
TIP (0.85 X 0.85, LCCC-132, Box Tip)	3439-01-399-4142	1121-0455-P1			1
VACUUM (PV-65 PikVac Handpiece)	4590-00-492-4739	7027-0001-P1			1
CUP, Suction (0.175 Diameter)	5340-01-406-9156	1121-0382-P5			1
CUP, Suction (0.300 Diameter)	5340-01-406-9157	1121-0383-P5			1
CUP, Suction (0.500 Diameter)	5340-01-406-9158	1121-0384-P5			1
TIP, Suction (45° Bend, 0.060)	5340-01-400-2102	1121-0413-P5			1
HEATER (ST-400 Preheater)	4520-01-575-4044	8007-0435			1
HOLDER (ST-550 CCA Holder)	4940-01-579-3194	6993-0254-P1			Opt
<u>OR</u> PREHEATER, HS-150		8040-0001			1
<u>OR</u> PREHEATER, HS-200		8007-0231-GOV			1
TIP, Electric (SMT Cleaning Station)	3439-01-348-8858	6993-0138	1	1	1
FIBER CLEANING TOOL	5120-01-396-1876	1100-0232	1	1	1
BRUSH (Fiber Replacement)	7920-01-390-6747	1127-0013-P2	1	1	1
CLEANING TOOL (Sponge Cleaning Tool MOQ – 4)	5120-01-408-9241	1100-0233	1	1	1
SPONGE (Sponge Replacement)	7920-01-389-9355	4021-0006-P5	1	1	1

NOMENCLATURE	NSN	P/N	AN/USM-674(V)3	AN/USM-674(V)4	AN/USM-726(V)1	AN/USM-726(V)2
5. AN/USM-674 (V) and AN/USM-726(V) Test Stations						
ANALYZER, ProTrack	NAVSEA Provided	20B	1	1		
ANALYZER, Tracker Model 32	6625-01-676-1329	06-1165			1	1
CABLE ASSY, Ribbon, 20 Pin	6150-01-497-0643	98-0103	2	2	2	2
CABLE ASSY, Ribbon, 40 Pin	6150-01-497-0647	98-0102	2	2	2	2
CABLE ASSY, Ribbon, 64 Pin	6150-01-410-8909	98-0072	Opt	Opt	Opt	Opt
CABLE ASSY, RJ45	6150-01-497-0652	98-0283	1	1		
CABLE ASSY, Triple BNC w/Ferrite	6150-01-497-0650	98-0282	1	1		
CABLE ASSY, USB, 6 ft	6150-01-529-7799	F3U133-06-GLD	1	1		
CABLE, ASSY, USB, 6 ft, Dual Choked	5995-01-676-1129	U023-006			1	1
CASE, Shipping & Storage	NAVSEA Provided	Various	Opt	Opt	Opt	Opt
CONTROLLER	NAVSEA Provided	Various	1			
CONTROLLER, Portable	NAVSEA Provided	Various		1		
CONTROLLER	7025-01-674-3934	CD3010			1	
CONTROLLER, Portable	7025-01-676-0203	CD3010P				1
FOOTSWITCH, Single	NAVSEA Provided	T-91-S	Opt	Opt		
FOOTSWITCH, X-KEY, 3 Position	NAVSEA Provided	Various	1	1	1	1
GROUND, Strip, Wrist Strap, ESD (Dual Conductor)	5999-01-491-7014	4720	1	1	1	1
LEAD, Test, Black Clip	6625-01-342-0752	601W-36 BLACK	2	2	2	2
LEAD, Test, Blue Clip	6625-01-342-5050	98-0036	2	2	2	2
LEAD SET, Test, Red & Black Probes	6625-01-172-7860	Y8140A	1	1	1	1
MAT, ESD (Soft)	5920-01-169-1322	8811	1	1	1	1
OR MAT,ESD (Soft)	4240-01-420-8334	8214	1	1	1	1
OR MAT, ESD (Rigid)	5920-01-491-3495	10350	1	1	1	1
METER (ESD Constant Monitor)	6625-01-491-0711	724	1	1	1	1
RESISTOR, 1 KOhm Jumper, Yellow	5905-01-408-6765	98-0029-03	2	2	2	2
RESISTOR, 10 KOhm Jumper, Green	5905-01-409-1923	98-0028-03	2	2	2	2
SCANNER, ProTrack I	NAVSEA Provided	I	1	1		
STRAP, Wrist, ESD (Dual Conductor)	5920-01-491-3509	4720	1	1	1	1
SUPPRESSOR, Surge, Shipboard	6150-01-362-7192	Various			1	1
TEST CLIP, IC, .300, 8 Pin	6625-01-408-5482	927739-08	2	2	2	2
TEST CLIP, IC, .300, 14 Pin	6625-01-408-5486	927739-14-1	2	2	2	2
TEST CLIP, IC, .300, 16 Pin	6625-01-408-5488	927739-16-1	2	2	2	2
TEST CLIP, IC, .300, 18 Pin	6625-01-408-5489	927739-18-1	2	2	2	2
TEST CLIP, IC, .300, 20 Pin	6625-01-408-5490	927739-20	2	2	2	2
TEST CLIP, IC, .300, 22 Pin	6625-01-408-5484	927738-22-1	2	2	2	2

TEST CLIP, IC, .300, 24 Pin	6625-01-408-5487	927738-24	2	2	2	2
TEST CLIP, IC, .300, 28 Pin	6625-01-408-4920	927738-28-1	2	2	2	2
NOMENCLATURE	NSN	P/N	AN/USM-674(V)3	AN/USM-674(V)4	AN/USM-726(V)1	AN/USM-726(V)2

5. AN/USM-674 (V) and AN/USM-726(V) Test Stations

TEST CLIP, IC, .600, 40 Pin (Wide)	6625-01-408-5485	927739-40-1	2	2	2	2
UECA (Edge Connector Adapter)	NAVSEA Provided	98-0086	Opt	Opt	Opt	Opt
Uninterrupted Power Supply (UPS)	NAVSEA Provided	Various	1	1	Opt	Opt

NOMENCLATURE	NSN	P/N	Shipboard	Repair Sites	Inspector Sites
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6. FOTR Toolkits

Toolkit, Light Duty (NAVSEA DWG 6872811)	5180-01-416-0565	Various	Determined by AEL 7-670054591	1	1
Toolkit, Heavy Duty (NAVSEA DWG 6872813)	5180-01-416-0567	Various		1	1
Toolkit, Combination (NAVSEA DWG 7085185)	5180-01-494-7433	Various			

NOMENCLATURE	NSN	P/N	Shipboard	Repair Sites	Inspector Sites
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7. FOTR HAZMAT

EPOXY	8040-01-579-5107	F112	Minimum 6 bi-packs		
ISOPROPYL Alcohol, Technical (Quart)	6810-00-983-8551	839889	Quantity as required		

NOMENCLATURE	NSN	NSWCDD Approved List	Light Duty	Heavy Duty	Combo
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8. FOTR Consumables

ALIGNMENT SLEEVE	5935-01-661-3527			12	12
CANNED AIR	6850-01-381-2675 6830-01-498-7119 6850-01-517-1506	TL-0013	1	1	1
CLEANING CLOTH (Pack of 25)	7920-01-321-6791 6640-01-659-3593	TL-0016	1	1	1
CLEANING SWABS, FOR M29504 Termini	7045-01-562-0539			1	1
CLEANING WIRE, 125 micron (3 ea.)	9505-01-376-9398 4030-01-620-2010	TL-0001	1	1	1
CONNECTOR, COTS SC	6060-01-491-9886	RPL	10		10
CONNECTOR, COTS LC	6060-01-546-7853	RPL	10		10
CONNECTOR, M83522/16-DNX, Multimode ST	6060-01-469-9672	RPL	20		20
CONNECTOR, M83522/16-DNY, Single Mode ST	6060-01-469-9707	RPL	10		10
Fusion Splice protector (M24623/6-1)		RPL	Recommend minimum of 10 for commands with a fusion splicer		
M85045/16-01	6015-01-422-6497		Opt - Recommend 200 Ft.		
M85045/16-02	6015-01-422-6500		Opt - Recommend 200 Ft.		

M85045/18-01	6015-01-442-9423	Opt - Recommend 200 Ft.			
M85045/18-02	6015-01-450-6228	Opt - Recommend 200 Ft.			
NOMENCLATURE	NSN	NSWCDD Approved List	Light Duty	Heavy Duty	Combo

8. FOTR Consumables (continued)

OPTIPOP REPLACEMENT REEL (6pk)	6070-01-670-1990		1		1
POLISHING PAPER, 5 micron Aluminum Oxide, Foam back	5350-01-420-1454 5350-01-620-1669	TL-0058	25	25	25
POLISHING PAPER, 1 micron Aluminum Oxide, Mylar back	5350-01-620-2007 5350-01-626-2526 5350-01-378-5749 5350-01-376-9388	TL-0057	25	25	25
POLISHING PAPER, 0.1 micron diamond, Mylar back	5350-01-563-5475 5350-01-620-1305	TL-0060	3	3	3
PROTECTIVE DUST CAPS, ST	5340-01-499-5899		20		20
SYRINGE w/ Twist on Dispensing Needles, 3ml Capacity	5120-01-438-6563	TL-0082	6	6	6
TERMINI, M29504/14 (pin)	6060-01-493-3524	RPL		12	12
TERMINI, M29504/15 (socket)	6060-01-424-2293	RPL		12	12

NOMENCLATURE	NSN	NSWCDD Approved List	Light Duty	Heavy Duty	Combo
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9. FOTR Tools

400X MICROSCOPE		TL-0048 TL-0049 TL-0050	1	1	1
400X SCOPE ADAPTER, LC *	6060-01-643-9207	TL-0146	1		1
ARAMID YARN SHEARS	5110-01-419-5283 5110-01-510-2794 5110-01-612-4651	TL-0045	1	1	1
BACKSHELL WRENCH, C-TYPE	5120-01-419-3283	TL-0004		1	1
BOOT RING TOOL, FOR M83522	5975-01-620-1668 5120-01-564-3826	TL-0051	1		1
CABLE CLIPS	5340-01-422-2168	TL-0027 TL-0028	2	2	2
CABLE JACKET STRIPPING TOOL	5110-01-419-3137 5110-01-612-4653	TL-012	1	1	1
CABLE STAND	6070-01-430-4607	TL-0027 TL-0028	1	1	1
CABLE STAND RING	5365-01-420-3692	TL-0027 TL-0028	1	1	1
CLEAVER, FIBER OPTIC	5120-01-563-9273 5110-01-419-4360	TL-014	1	1	1
CRIMPER, FRAME	5120-01-419-3735 5120-01-563-6451	TL-0021	1	1	1
CRIMP TOOL w/Die Set for M29054/14/15/18 C20 termini	5120-01-419-3730 5120-01-439-0676 5120-01-620-2032	TL-0017		1	1
CURE ADAPTER, FOR M83522	6060-01-620-1659	TL-024	12		12

	6070-01-420-0551			
CURE ADAPTER, FOR TIA-604-3	6060-01-478-9450	TL-0024	6	6
CURE ADAPTER, LC *	6060-01-620-1658	TL-0117	12	12
CURE ADAPTER, M29504	6070-01-420-0522	TL-0135		16
CURING OVEN	4430-01-419-6384	TL-0028	1	1

NOMENCLATURE	NSN	NSWCDD Approved List	Light Duty	Heavy Duty	Combo
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9. FOTR Tools (continued)

DIE SET 0.113-0.120" HEX FOR LC *		TL-0118 (Die) TL-0116 (Crimper w/Die)	1		1
DIE SET for M83522/16	5120-01-572-1681 5110-01-470-8511 5120-01-563-6450	TL-0018 (Crimper w/Die) TL-0022 (Die) TL-0023 (Die)	1		1
DIE SET WITH 0.195, 0.140, AND 0.110 CAVITIES FOR TIA- 604-3	5120-01-563-6449	TL-0120 TL-0019	1		1
DUAL-POST, TORQUE WRENCH ADAPTER, SHELL SIZE 11	5120-01-420-2445	TL-0091		1	1
EYE LOUPE	6650-00-994-6883 6650-01-586-6297	TL-0033	1	1	1
FLASHLIGHT	6230-01-419-5898 6035-01-509-2511	TL-0034	1	1	1
HEATER BLOCK	6070-01-420-7682	TL-0028	1	1	1
HYBRID ADAPTER, ST TO SC	6060-01-478-9985 6060-01-539-3529	TL-0036	2		2
INSERTION TOOL, 90 DEG	5120-01-145-5172	TL-0038		1	1
INSERTION TOOL, TERMINUS	5120-01-144-5338	TL-0040		1	1
INSERTION/REMOVAL TOOL, ALIGNMENT SLEEVE	5120-01-419-2942 5120-01-529-9328	TL-0042		1	1
LC-LC Adapter		TS-0013	4		4
O-RING INSTALLATION TOOL SHELL SIZE 11	5120-01-424-7866	TL-0052		1	1
O-RING INSTALLATION TOOL SHELL SIZE 13	5120-01-424-7867	TL-0053		1	1
O-RING INSTALLATION TOOL SHELL SIZE 15	5120-01-424-7868	TL-0054		1	1
OPTIPOP REEL CLEANER	6070-01-529-1858	TL-0115	1		1
POLISHING PLATE	6080-01-377-4502 6080-01-620-1671	TL-0062	1	1	1
POLISHING TOOL, LC *	3120-01-620-1655	TL-0121	1		1

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POLISHING TOOL, M29504	5120-01-419-3142	TL-0064	1	1	
POLISHING TOOL, FOR M83522/TIA-604-3	6080-01-563-1720	TL-0063	1		1
REMOVAL TOOL, TERMINUS	5998-01-147-0198	TL-0065	1		1
RESILIENT PAD, 70 TO 90 DUROMETER	6070-01-408-6275 5140-01-620-3511 5130-01-563-4837	TL-0067	1	1	1
SCALE, 6"	5210-00-725-7347	TL-0069	1	1	1
SOCKET, SOCKET WRENCH ¼" HEX ADAPTER FOR 3/8" DRIVE	5120-01-355-1622 5120-01-399-9580	TL-0070		1	1
SOLVENT DISPENSER, 4oz leak proof	8125-01-439-5367	TL-0030	1	1	1
SPECTACLES, NYLON UTILITY	6540-01-443-7953 4240-01-561-7694 4240-01-620-1267	TL-0071	1	1	1
ST-ST Adapter	M83522/17-NY	TS-0009	4		4
STRIP TOOL, OFCC, 18AWG	5110-00-246-0975 5110-01-559-9272	TL-0081	1	1	1
STRIP TOOL, OPTICAL FIBER	5110-01-419-4361 5110-01-612-4650 5110-01-559-9272	TL-0078	1	1	1
NOMENCLATURE	NSN	NSWCDD Approved List	Light Duty	Heavy Duty	Combo

9. FOTR Tools (continued)

TEMPLATE, CUT LENGTH M83522	6675-01-420-5614 9310-01-620-1670	TL-0083	1		1
TEMPLATE, CUT LENGTH, TIA-604-3	7690-01-478-9546 9310-01-620-1948	TL-0084	1		1
TORQUE WRENCH, 3/8" DRIVE	5120-00-230-6380	TL-0090		1	1
TRI-POST, TORQUE WRENCH ADAPTER, SHELL SIZE 13	5120-01-420-2444	TL-0092		1	1
TRI-POST, TORQUE WRENCH ADAPTER, SHELL SIZE 15	5120-01-420-2446	TL-0093		1	1
TWEEZERS	6635-01-232-9536	TL-0094		1	1
WATER BOTTLE				1	1

*- LC tools were added to Light Duty and Combination kits in May 2019, kits prior to that date may not have LC tooling

NOMENCLATURE	NSN	P/N	ALL Shipboard	Land Based Repair Sites	Inspector Sites	Instructor Sites
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10. FOTR MEASUREMENT QUALITY JUMPERS

50m ST-ST Multimode (MM)	6020-01-417-1963	6877804-01	Determined by AEL 7-670054592	1	1	2
50m ST-M29504/14 Termini MM	6020-01-417-1964	6877804-03		1	1	2
50m ST-M29504/15 Termini MM	6020-01-417-1967	6877804-04		1	1	2
1m ST-ST MM	6020-01-417-5230	6877804-05		4	4	4

1m ST-M28876 4-Channel Plug MM	6020-01-417-5244	6877804-07	Determined by AEL 7- 670054592	1	1	1
1m ST-M28876 4-Channel Receptacle MM	6020-01-418-6285	6877804-08		2	2	2
1m ST-M28876 8-Channel Plug MM	6020-01-425-9727	6877804-09		1		
1m ST-M28876 8-Channel Receptacle MM	6020-01-425-9730	6877804-10		2		
1m ST-M28876 31-Channel Plug MM	6625-01-495-7550	6877804-12		1		
1m ST-M28876 31-Channel Receptacle MM	6625-01-495-7552	6877804-13		2		
50m ST-LC MM	6020-01-692-6310	6877804-14		1	1	2
1m ST-LC MM	6020-01-692-6302	6877804-15		4	4	4
50m ST-ST Single Mode (SM)	6625-01-498-9987	6877804-01SME	Determined by AEL 7- 670054594	1		2
50m ST-M29504/14 Termini SM	6625-01-498-9980	6877804-03SME		1		
50m ST-M29504/15 Termini SM	6625-01-498-9988	6877804-04SME		1		
1m ST-ST SM	6625-01-498-9998	6877804-05SME		4		4
1m ST-M28876 4-Channel Plug SM	6625-01-496-9904	6877804-07SME		1		
1m ST-M28876 4-Channel Receptacle SM	6625-01-496-9906	6877804-08SME		2		
1m ST-M28876 8-Channel Plug SM	6625-01-496-9913	6877804-09SME		1		
1m ST-M28876 8-Channel Receptacle SM	6625-01-496-9910	6877804-10SME		2		
1m ST-M28876 31-Channel Plug SM	6625-01-496-9911	6877804-12SME	Determined by AEL 7- 670054594	1		
1m ST-M28876 31-Channel Receptacle SM	6625-01-496-9912	6877804-13SME		2		
50m ST-LC SM	6020-01-692-6309	6877804-14SME		1		
1m ST-LC SM	6020-01-692-6307	6877804-15SME		4		

Appendix G

2M/MTR Inspector JQR

1. Microminiature Electronics Repair certified.

(SIGNATURE AND DATE)

2. 2M/MTR Technician Recertifier course (A-100-0058) completed or prior 2M/MTR Instructor/2M/MTR Technician Recertifier.

(SIGNATURE AND DATE)

3. Module Test and Repair Equipment Operator course (A-100-0076) completed.

(SIGNATURE AND DATE)

4. Complete MTR Recertification performance test.

(SIGNATURE AND DATE)

5. Assist a certified 2M/MTR/FOTR Inspector in four (4) site certifications to include:

- a. Conduct arrival briefs and a departure briefs.

(SIGNATURE AND DATE)

- b. Requisitions vs. MTRTS screening since the last site certification.

(SIGNATURE AND DATE)

- c. Complete inventory of 2M soldering stations inclusive of Appendix F.

(SIGNATURE AND DATE)

- d. Complete inventory of MTR equipment inclusive of applicable NUWC MTR checklist, include model numbers.

(SIGNATURE AND DATE)

- e. Complete operability test of the 2M soldering station(s) IAW applicable PMS procedures.

(SIGNATURE AND DATE)

- f. Complete operability of the MTR equipment as outlined in the NUWC checklist or IAW applicable PMS procedures.

(SIGNATURE AND DATE)

- g. Accumulate all 2M/MTR technician data to include PRD, rate, CERT level, and CERT expiration date. Verify accuracy of the manning documents.

(SIGNATURE AND DATE)

- h. Provide MTRTS utilization training to ship's company as needed.

(SIGNATURE AND DATE)

- i. Verify appropriate 2M/MTR/Piece Parts APLs are installed onboard.

(SIGNATURE AND DATE)

- j. Verify 2M/MTR space meets environmental requirements.

(SIGNATURE AND DATE)

- k. Verify sufficient number of electrical outlets.

(SIGNATURE AND DATE)

- l. Verify all applicable instructions and technical manuals are locally available.

(SIGNATURE AND DATE)

- m. Conduct operational test of ESD constant monitoring system IAW PMS.

(SIGNATURE AND DATE)

- n. Ensure 2M/MTR stations are properly grounded and all ESD precautions are being followed.

(SIGNATURE AND DATE)

- o. Provide training to supply personnel on JFMM requirements, NAVSUP P485 procedures, and NAVSUP P484 procedures (Repackaging of RFI DLR'S).

(SIGNATURE AND DATE)

- p. Obtain supply requisition data and perform program effectiveness analysis.

(SIGNATURE AND DATE)

- q. Confirm calibration of pressure/vacuum gauge.

(SIGNATURE AND DATE)

- r. Verify adequate storage and security of tools, workstation surface minimum of 24"x36" and adequate legroom for technician.

(SIGNATURE AND DATE)

- s. Obtain 2M/MTR/FOTR SharePoint access and log onto the 2M/MTR/FOTR database.

(SIGNATURE AND DATE)

- t. Verify current MTRTS repair data was submitted.

(SIGNATURE AND DATE)

- u. Update 2M/MTR Technician records in 2M/MTR/FOTR database.

(SIGNATURE AND DATE)

- v. Insert/update 2M and MTR equipment data in 2M/MTR/FOTR database.

(SIGNATURE AND DATE)

- w. Insert/update command certification date in 2M/MTR/FOTR database.

(SIGNATURE AND DATE)

6. Under the supervision of a qualified 2M/MTR/FOTR Inspector:

- a. Evaluate 2M/MTR technician recertification projects in lab (three separate convenings).

(SIGNATURE AND DATE)

- b. Update technician certification data in 2M/MTR/FOTR database, issue recertification documents.

(SIGNATURE AND DATE)

7. Paperwork familiarization.

(SIGNATURE AND DATE)

8. Demonstrate proficiency in troubleshooting:

- a. 2M soldering stations.

(SIGNATURE AND DATE)

- b. MTR test station.

(SIGNATURE AND DATE)

9. Complete one site certification under the observation of a certified 2M/MTR/FOTR Inspector or 2M/MTR/FOTR Fleet Coordinator, including updating the 2M/MTR/FOTR database and submit all Site Certification/ Decertification documents to appropriate authority.

(SIGNATURE AND DATE)

10. Final certifying signature: _____ Date: _____
2M/MTR/FOTR Fleet Coordinator

Appendix G-1

NAVAIR 2M/MTR Inspector JQR

1. Microminiature Electronics Repair certified.

(SIGNATURE AND DATE)

2. 2M/MTR Technician Recertifier course (A-100-0058) completed or prior 2M/MTR Instructor/2M/MTR Technician Recertifier.

(SIGNATURE AND DATE)

3. Module Test and Repair Equipment Operator course (A-100-0076) completed.

(SIGNATURE AND DATE)

4. Complete MTR Recertification performance test.

(SIGNATURE AND DATE)

5. Observation conducted by command designated 2M Quality Assurance Representative (QAR) for 2M certified sites, to include:

- a. Requisitions vs. MTRTS screening since the last site certification.

(SIGNATURE AND DATE)

- b. Complete inventory of 2M soldering stations inclusive of Appendix F.

(SIGNATURE AND DATE)

- c. Complete inventory of MTR equipment inclusive of applicable NUWC MTR checklist, including model numbers.

(SIGNATURE AND DATE)

- d. Complete operability test of the 2M soldering station(s) IAW applicable PMS procedures.

(SIGNATURE AND DATE)

- e. Complete operability of the MTR equipment as outlined in the NUWC checklist or IAW applicable PMS procedures.

(SIGNATURE AND DATE)

- f. Accumulate all 2M/MTR technician data to include PRD, rate, CERT level, and CERT expiration date. Verify accuracy of the manning documents.

(SIGNATURE AND DATE)

- g. Verify 2M/MTR space meets environmental requirements, current IH Survey on hand.

(SIGNATURE AND DATE)

- h. Verify sufficient number of electrical outlets.

(SIGNATURE AND DATE)

- i. Verify all applicable instructions and technical manuals are locally available.

(SIGNATURE AND DATE)

- j. Conduct operational test of ESD constant monitoring system IAW PMS.

(SIGNATURE AND DATE)

- k. Ensure 2M/MTR stations are properly grounded and all ESD precautions are being followed.

(SIGNATURE AND DATE)

- l. Provide documented training to supply personnel on JFMM requirements, NAVSUP P485 procedures, and NAVSUP P484 procedures (Repackaging of RFI DLRs).

(SIGNATURE AND DATE)

- m. Confirm calibration of pressure/vacuum gauge.

(SIGNATURE AND DATE)

- n. Verify adequate storage and security of tools, workstation surface minimum of 24"x36", and adequate legroom for technician.

(SIGNATURE AND DATE)

- o. Obtain 2M/MTR/FOTR SharePoint access and verify by logging onto the 2M/MTR/FOTR database.

(SIGNATURE AND DATE)

- p. Verify current MTRTS repair data is being submitted.

(SIGNATURE AND DATE)

- q. Insert/update 2M/MTR Technician records in 2M/MTR/FOTR database.

(SIGNATURE AND DATE)

- r. Insert/update 2M and MTR equipment data in 2M/MTR/FOTR database.

(SIGNATURE AND DATE)

- s. Insert/update command certification date in 2M/MTR/FOTR database.

(SIGNATURE AND DATE)

6. Under the direct supervision of a command designated 2M QAR:

- a. Evaluate 2M/MTR technician recertification projects in NAVAIR 2M Repair Work Center, conducted by command designated 2M Recertifier.

(SIGNATURE AND DATE)

- b. Verify updates to technician certification data in 2M/MTR/FOTR database and recertification documents issued.

(SIGNATURE AND DATE)

7. Paperwork familiarization.

(SIGNATURE AND DATE)

8. Demonstrate proficiency in troubleshooting:

- a. 2M soldering stations.

(SIGNATURE AND DATE)

- b. MTR test station.

(SIGNATURE AND DATE)

9. Complete one site certification under the observation of command designated QAR, including updating the 2M/MTR/FOTR database and submit all Site Certification/ Decertification documents.

(SIGNATURE AND DATE)

10. Final certifying signature: _____ Date: _____
Unit Maintenance Officer

Appendix H

FOTR Inspector JQR

1. FOTR Maintainer certified.

(SIGNATURE AND DATE)

2. Complete FOTR recertification performance test.

(SIGNATURE AND DATE)

3. Assist a certified FOTR Inspector in four (4) site certifications to include:

- a. Conduct arrival briefs and a departure briefs.

(SIGNATURE AND DATE)

- b. Complete inventory of FOTR work center inclusive of Appendix F.

(SIGNATURE AND DATE)

- c. Complete inventory of assigned GPETE Fiber Optic Test Equipment

(SIGNATURE AND DATE)

- d. Complete operability test of the GPETE Fiber Optic Test Equipment.

(SIGNATURE AND DATE)

- e. Complete Inventory of Measurement Quality Jumpers.

(SIGNATURE AND DATE)

- f. Complete Inventory of Fiber Optic Repair Toolkits.

(SIGNATURE AND DATE)

- g. Accumulate all FOTR technician data to include PRD, rate, CERT level, and CERT expiration date. Verify accuracy of the manning documents.

(SIGNATURE AND DATE)

- h. Provide MTRTS utilization training to ship's company as needed. Ensure crew is aware of 9R and 9X codes and the need to record all actions.

(SIGNATURE AND DATE)

- i. Verify appropriate FOTR AELs and APLs are installed onboard.

(SIGNATURE AND DATE)

- j. Verify all applicable instructions and technical manuals are locally available.

(SIGNATURE AND DATE)

- k. Obtain 2M/MTR/FOTR SharePoint access and log onto the 2M/MTR/FOTR database.

(SIGNATURE AND DATE)

- l. Verify current FOTR repair data was submitted in MTRTS system.

(SIGNATURE AND DATE)

- m. Update FOTR Technician records in 2M/MTR/FOTR database.

(SIGNATURE AND DATE)

- n. Insert/update FOTR equipment data in 2M/MTR/FOTR database.

(SIGNATURE AND DATE)

- o. Insert/update command certification date in 2M/MTR/FOTR database.

(SIGNATURE AND DATE)

4. Under the supervision of a qualified FOTR Inspector:

- a. Evaluate FOTR technician recertification projects in lab (three separate convenings).

(SIGNATURE AND DATE)

- b. Update technician certification data in 2M/MTR/FOTR database, issue recertification documents.

(SIGNATURE AND DATE)

5. Paperwork familiarization.

(SIGNATURE AND DATE)

6. Demonstrate proficiency in troubleshooting using the FO Test Rig:

- a. OTDR Operation and OLTS Operation.

(SIGNATURE AND DATE)

7. Complete one site certification under the observation of a certified FOTR Inspector, 2M/MTR/FOTR Fleet Coordinator or FOTR Certification Agent, including updating the 2M/MTR/FOTR database and submit all Site Certification/ Decertification documents to appropriate authority.

(SIGNATURE AND DATE)

8. Final certifying signature: _____ Date: _____
2M/MTR/FOTR Fleet Coordinator

Appendix I

2M/MTR Equipment Verification Process

1. 2M Workstation
 - a. Verify PRC-2000 passes MIP 6652/005, MRCs S-1 and 18M-2 (NAVSEA).
 1. Verify PRC-2000 passes MRC 17-600-193-6-2 Card 8 (NAVAIR).
 - b. Verify MBT-250 passes MIP 6652/005, MRC 18M-3 (NAVSEA).
 1. Verify MBT-250 passes MRC 17-600-193-6-2 Card 10 (NAVAIR),
 - c. Verify operation of conductive handpieces and pulse heat function (PRC-2000).
 - d. Verify operation of microscope.
 - e. Verify operation of portable motor driven handpiece (MCM/SSBN/SSGN only).
2. ESD SYSTEM
 - a. Verify ESD system passes MIP 6652/005, MRC M-2 or M-1 as applicable; or MIP 4911/003, MRC M-2 or MRC M-1 as applicable, (NAVSEA) or MRC 17-600-193-6-2 Card 1 (NAVAIR).
3. MTR Station
 - a. Verify MTR Station passes MIP 4911/003, MRC Q-2 (NAVSEA) or MRC 17-600-525-6-2 Card 1 (NAVAIR).
 - b. Verify MTR Station has the latest version of applicable software installed.

Appendix J

2M/MTR/FOTR Inspector Certification Letter Template

From: Commanding Officer, Southeast or Southwest Regional
Maintenance Center

To: Commanding Officer, *2M/MTR/FOTR Inspector Site, Address*
(*2M/MTR/FOTR Inspector Site POC, Code ###, if required*)

Subj: CERTIFICATION OF MINIATURE/MICROMINIATURE ELECTRONICS
MODULE TEST AND REPAIR (2M/MTR/FOTR) INSPECTOR or Fiber
Optic Test and Repair (FOTR) INSPECTOR

Ref: (a) NAVSEA TE000-AA-MAN-010/2M, Revision 7, Certification
Manual for Miniature/Microminiature Electronics Module
Test and Repair/Fiber Optic Test and Repair
(2M/MTR/FOTR) Program
(b) NAVSEAINST 4790.17B, Miniature/Microminiature Module
Test and Repair (2M/MTR/FOTR) Program

1. Southeast or Southwest Regional Maintenance Center conducted a Miniature/Microminiature Electronics Module Test and Repair (2M/MTR/FOTR) Inspector or Fiber Optic Test and Repair (FOTR) Inspector Certification of *2M/MTR/FOTR Inspector or FOTR Inspector* on *DD-DD Month YYYY*. *2M/MTR/FOTR Inspector Name* is certified to perform the duties of a 2M/MTR/FOTR Inspector or FOTR Inspector in accordance with references (a) and (b).

2. *2M/MTR/FOTR Inspector Name's* 2M/MTR/FOTR Inspector or FOTR Inspector certification expires *DD Month YYYY*.

3. Southeast or Southwest RMC (2M/MTR/FOTR Fleet Coordinator) point of contact for additional information or assistance is *2M/MTR/FOTR Fleet Coordinator Name (Code)*, available at DSN ###-### or commercial ###-###-#### and by email at first.last.@us.navy.mil.

Signature
Name
By Direction

Copy to:

Appendix K

2M/MTR/FOTR Fleet Coordinator Certification Letter/Enclosure Template

From: Commander, Naval Sea Systems Command
To: Commanding Officer, Southeast Regional Maintenance Center,
Mayport, FL or Southwest Regional Maintenance Center, San
Diego, CA (RMC POC, Code ####)

Subj: CERTIFICATION OF MINIATURE/MICROMINIATURE ELECTRONICS
MODULE TEST AND REPAIR/FIBER OPTIC TEST AND REPAIR
(2M/MTR/FOTR) ATLANTIC or PACIFIC FLEET COORDINATOR

Ref: (a) NAVSEA TE000-AA-MAN-010/2M, Revision 7, Certification
Manual for Miniature/Microminiature Electronics Module
Test and Repair/Fiber Optic Test and Repair
(2M/MTR/FOTR) Program
(b) NAVSEAINST 4790.17B, Miniature/Microminiature Module
Test and Repair (2M/MTR/FOTR) Program

Encl: (1) 2M/MTR/FOTR Atlantic or Pacific Fleet Coordinator
Certification Report (DD Month YYYY)

1. NUWC Det FEO Norfolk or NSWC Dahlgren Division conducted a
Miniature/Microminiature Electronics Module Test and Repair/Fiber
Optic Test and Repair (2M/MTR/FOTR) Fleet Coordinator
Certification of *2M/MTR/FOTR Fleet Coordinator Name* on *DD-DD Month
YYYY*. *2M/MTR/FOTR Fleet Coordinator Name* is certified to perform
the duties of the 2M/MTR/FOTR Atlantic or Pacific Fleet
Coordinator, in accordance with references (a) and (b). The
results of this 2M/MTR/FOTR Fleet Coordinator Certification are
provided in enclosure (1).

2. *2M/MTR/FOTR Fleet Coordinator Name's* 2M/MTR/FOTR Fleet
Coordinator certification expires DD Month YYYY.

3. NUWC Det FEO Norfolk or NSWC Dahlgren Division (2M, MTR or
FOTR Certification Agent) point of contact is *2M, MTR or FOTR
Certification Agent Name*, telephone DSN ###-### or commercial
###-###-#### and by email at first.last@us.navy.mil. The NAVSEA
2M/MTR/FOTR Program Manager is Mr. Richard Stark (SEA 09MM35),
available at 202-781-1491 and Richard.r.stark.civ@us.navy.mil.

Signature

Name

By direction

Copy to:

2M/MTR/FOTR Fleet Coordinator Certification

1. Activity/UIC:
2. Dates of Certification: DD-DD Month YYYY
3. Certification Activity: NUWC Det FEO Norfolk (CRTA *or* CRTB), *or* NSWC Dahlgren (CRTC), 2M, MTR *or* FOTR Certification Agent *Name*
4. An arrival brief was conducted with *Name, Title*; and *Name, Title*.
5. 2M/MTR/FOTR Fleet Coordinator:

NAME	RANK	Certification Level	Certification Expiration

6. 2M/MTR/FOTR Fleet Coordinator *Name* completed 2M/MTR Technician Recertifier Requalification training *or* completed the FOTR requirements of MIL-STD-1678-1 Requirement 1306 *DD Month YYYY*.
7. Status of delinquent Atlantic *or* Pacific Fleet 2M/MTR *or* FOTR repair sites:

Ship/Site	Cert Due	COMMENTS

- a. Status of delinquent Atlantic *or* Pacific Fleet 2M/MTR *or* FOTR Inspector sites:

Inspector Site	Cert Due	COMMENTS

8. Accompanied and observed 2M/MTR/FOTR Fleet Coordinator *Name* performing a satisfactory 2M/MTR *or* FOTR Repair *or* 2M/MTR *or* FOTR Inspector Site certification aboard *or* at 2M/MTR *or* FOTR Repair *or* Inspector Site.
9. Inventoried 2M equipment in accordance with Appendix F and verified operation of 2M equipment in accordance with Appendix I.

- a. 2M/MTR/FOTR Inspector Site has all required consumables, tools and support equipment.

OR

- a. The following tools and/or materials are missing or damaged and require replacement:

1. (List deficiencies).

- b. All 2M/MTR/FOTR recertification equipment is fully operational.

OR

- a. The following 2M/MTR/FOTR recertification equipment is not fully operational.

1. (List deficiencies and disposition)

10. Documented the serial numbers, quantities and locations of the 2M Electronic Rework Power Units and auxiliary 2M equipment in the 2M/MTR/FOTR database.

MTR Station	Station Number	Serial Number
Nomenclature	AN/USM-726 (V)1	
Controller	AS-3000	N64281####
UPS		
Monitor	NEC	
MTR Test Equipment	Model 32/ProTrack	KJ3/DA1-#####
Scanner(if equipped)	Huntron	340-#####
MTR Foot Pedal	X-Key	
ESD Constant Monitor	3M 724 or SCS 724	
Workbench	VIDMAR or Benelex	
Location		
Work Center		

2M Station	#1	Serial Number
Certification Level	MC <i>or</i> MN	
Power Unit	PRC-2000 <i>or</i> MBT-250	
Microscope	Meiji <i>or</i> OC White	
Preheater	ST-400 <i>or</i> HS-150	
Light Source	Techniquip	
LED Ring Light	OC White	
Portable Power Unit	ST-25	
ESD Constant Monitor	3M 724 <i>or</i> SCS 724	
Workbench	VIDMAR <i>or</i> Benelex	
Location		
Work Center		

FOTR Station		Serial Number
Certification Level		
Light Duty Kit		
Heavy Duty Kit		
Combination (Submarine) Kit		
OTDR		
OLTS (2)		
Troubleshooting Test Rig		
MQJs		
Spare tooling		
Location		
Work Center		

11. Discussed the following proposed changes to tools, equipment, techniques and 2M, MTR, or FOTR training curriculum.

a. (List topics discussed and pertinent information).

12. *2M/MTR/FOTR Inspector Site* has an ample supply of 2M/MTR/FOTR recertification material.

OR

12. *2M/MTR/FOTR Inspector Site* is in short supply of and/or missing the following 2M/MTR/FOTR recertification material.

a. (List deficiencies).

13. *2M/MTR/FOTR Inspector Site* meets the facility requirements for 2M/MTR/FOTR electronics/fiber optics repair.

OR

12. *2M/MTR/FOTR Inspector Site* does not meet the facility requirements for 2M/MTR/FOTR electronics/fiber optics assembly repair.

13. *2M/MTR/FOTR Inspector Site* workbenches meet the requirements for 2M/MTR/FOTR electronics/fiber optics assembly repair.

OR

12. *2M/MTR/FOTR Inspector Site* workbenches do not meet the requirements for 2M/MTR/FOTR electronics/fiber optics assembly repair.

a. (List deficiencies).

14. *2M/MTR/FOTR Inspector Site* has access to the 2M/MTR/FOTR SharePoint site for current 2M/MTR/FOTR documentation.

OR

14. *2M/MTR/FOTR Inspector Site* does not have access to the 2M/MTR/FOTR SharePoint site for current 2M/MTR/FOTR documentation.

15. *2M/MTR/FOTR Inspector Site* Inspector(s) are reporting completion of 2M/MTR/FOTR repair site certifications and 2M/MTR/FOTR personnel certifications in the 2M/MTR/FOTR database.

OR

15. *2M/MTR/FOTR Inspector Site* 2M/MTR/FOTR Inspector(s) are not reporting completion of 2M/MTR/FOTR repair site certifications and 2M/MTR/FOTR personnel certifications in the 2M/MTR/FOTR database.

16. *2M/MTR/FOTR Inspector Site* 2M/MTR/FOTR Inspector(s) has completed the 2M/MTR and FOTR Inspector JQR.

OR

16. *2M/MTR/FOTR Inspector Site* 2M/MTR/FOTR Inspector(s) has not completed the 2M/MTR/FOTR Inspector JQR

- a. (List deficiencies)
17. As a result of the 2M/MTR/FOTR Fleet Coordinator Certification conducted *DD-DD Month YYYY*, *2M/MTR/FOTR Fleet Coordinator Name* is certified to perform the duties as the 2M/MTR/FOTR Atlantic *or* Pacific Fleet Coordinator in accordance with NAVSEA TE000-AA-MAN-010/2M Revision 7, Certification Manual for Miniature/Microminiature Electronics Module Test and Repair/Fiber Optic Test and Repair (2M/MTR/FOTR) Program and NAVSEAINST 4790.17B, Miniature/Microminiature Module Test and Repair (2M/MTR/FOTR) Program.
18. A departure brief was conducted with *Name, Title; Name, Title*; and *2M/MTR/FOTR Fleet Coordinator Name*.
19. A departure brief was conducted with *Name, Title; Name, Title*; and *2M/MTR/FOTR Fleet Coordinator Name*.

Certification Agent Name

Appendix L

2M/MTR Repair Site Certification Letter/Enclosure

From: Commanding Officer, *2M/MTR Inspector Site* or AMMT Officer,
Commander Naval Air Forces

To: Commanding Officer, *2M/MTR Repair Site (HULL ###)*, Address
(*2M Repair Site POC*, Code ####, if required)

Subj: CERTIFICATION OF MINIATURE/MICROMINIATURE ELECTRONICS
MODULE TEST AND REPAIR (2M/MTR) REPAIR SITE, *2M/MTR REPAIR
SITE*

Ref: (a) NAVSEA TE000-AA-MAN-010/2M, Revision 7, Certification
Manual for Miniature/Microminiature Electronics Module
Test and Repair/Fiber Optic Test and Repair
(2M/MTR/FOTR) Program or

(a) NAVAIR SE-004-PQS-000, Revision 7, Certification Manual
for Miniature/Microminiature Electronics Module Test
and Repair/Fiber Optic Test and Repair (2M/MTR/FOTR)
Program

(b) NAVSEAINST 4790.17B, Miniature/Microminiature Module
Test and Repair (2M/MTR) Program or

(b) COMNAVAIRFORINST 4790.2C, The Naval Aviation
Maintenance Program or

(b) COMDTINST 4790.2D, Coast Guard Miniature/Microminiature
(2M)/Module Test and Repair (MTR) Program

(c) COMFLTFORCOMINST 4790.3, Joint Fleet Maintenance Manual
(NAVSEA only)

(d) NAVSUP Publication 485, Operational Forces Supply
Procedures or Naval Supply Procedures Ashore (NAVSEA
only)

Encl: (1) 2M/MTR Repair Site Certification Report for *2M/MTR
Repair Site* (DD Month YYYY)

(2) 2M/MTR Repair Site Certification Certificate

1. A Miniature/Microminiature Electronics Module Test and Repair
(2M/MTR) Repair Site Certification of *2M/MTR Repair Site (HULL
###)* was conducted by *2M/MTR Inspector Site* representative *2M/MTR
Inspector Name* on *DD-DD Month YYYY*. The results of the 2M/MTR
Repair Site Certification are provided in enclosure (1). The
2M/MTR Repair Site Certification Certificate is provided in
enclosure (2).

2. Station serial number ##-###-### is capable of providing quality 2M repairs at the microminiature level in accordance with references (a) and (b). Station serial number ##-###-### is capable of providing quality 2M repairs at the miniature level in accordance with references (a) and (b). Test station #####-### is capable of conducting MTR electronic fault isolation in accordance with references (a) and (b).

OR

2. Test station #####-### is capable of conducting MTR electronic fault isolation in accordance with references (a) and (b). Station serial number ##-###-### is downgraded and is capable of providing quality 2M repairs at the miniature level only. When the deficiencies noted in enclosure (1) have been corrected, contact 2M/MTR/FOTR *Inspector Site Code* #### to schedule a follow up review.

OR

2. Test station #####-### is capable of conducting MTR electronic fault isolation in accordance with references (a) and (b). Station serial number ##-###-### is not capable of providing 2M repairs. When the deficiencies noted in enclosure (1) have been corrected, contact 2M/MTR/FOTR *Inspector Site Code* #### to schedule a follow up review.

OR

2. Station serial number ##-###-### is capable of providing quality 2M repairs at the microminiature level in accordance with references (a) and (b). Test station #####-### is not capable of conducting MTR electronic fault isolation. When the deficiencies noted in enclosure (1) have been corrected, contact 2M/MTR/FOTR *Inspector Site Code* #### to schedule a follow up review.

OR

2. Station serial number ##-###-### is not capable of providing 2M repairs. Test station #####-### is not capable of conducting MTR electronic fault isolation. When the deficiencies noted in enclosure (1) have been corrected, contact 2M/MTR/FOTR *Inspector Site Code* #### to schedule a follow up review.

3. The new certification expiration date is *DD Month YYYY*.

4. *2M/MTR/FOTR Inspector Site* evaluated the *2M/MTR Repair Site* 2M/MTR program in accordance with references (c) and (d). The 2M/MTR work center is being utilized, however not to the fullest extent or is being effectively utilized or is being very effectively utilized. This evaluation is based on *2M/MTR Repair Site's* percentage of screening effectiveness which is calculated to be ##% since the last 2M/MTR certification. The 2M/MTR work center contributes significantly to the operational readiness and provides substantial cost savings to *2M/MTR Repair Site*. 2M/MTR Technician Rank Name should be commended for their outstanding efforts.

OR

4. *2M/MTR/FOTR Inspector Site* evaluated the *2M/MTR Repair Site* 2M/MTR program in accordance with references (c) and (d). The 2M/MTR work center is not being utilized. This evaluation is based on *2M/MTR Repair Site* percentage of screening effectiveness which is calculated to be 0% since the last 2M/MTR certification. Effective use of the 2M/MTR work center will increase the command's operational readiness and prove substantial cost savings. Details on measuring program effectiveness and recommendations for improving *2M/MTR Repair Site's* 2M/MTR Program are detailed in enclosure (1).

OR

4. Due to *2M/MTR Repair Site's* exemption from MTRTS reporting during the last ## months, *2M/MTR/FOTR Inspector Site* did not evaluate the effectiveness of *2M/MTR Repair Site's* 2M/MTR Program. Effective use of the 2M/MTR work center will increase the command's operational readiness and provide substantial cost savings.

5. *2M/MTR/FOTR Inspector Site* or CNAF AMMT Team (2M/MTR/FOTR Inspector) point of contact is *2M/MTR/FOTR Inspector Name* or *AMMT Team Member Name* (Code), available at DSN ###-### or commercial ###-###-#### and by email at first.last@us.navy.mil.

Signature

Name

By direction

Copy to:

2M/MTR Repair Site Certification

- 1. Activity/UIC: 2M Repair Site (Hull ###) / 2M UIC
- 2. Dates of Certification: DD-DD Month YYYY
- 3. Certification Activity: 2M/MTR/FOTR Inspector Site, 2M/MTR/FOTR Inspector Name
- 4. An arrival brief was conducted with Rank Name, Title; Rank Name, Title; and Name, Title
- 5. 2M/MTR Technicians:

NAME	RATE	Work Center	PRD	Certification Level	Certification Expiration

- a. 2M/MTR Technician has an expired 2M/MTR certification and is not authorized to conduct 2M/MTR repair.
 - b. 2M/MTR Technicians with expired 2M/MTR certifications need to be scheduled for recertification. Recertification services are available through 2M/MTR/FOTR Inspector Site Code ### at (###)-###-####.
- 6. Inventoried 2M/MTR consumables, tools and support equipment in accordance with Appendix F and verified operation of 2M equipment in accordance with Appendix I.
 - a. Documented the serial numbers and locations of the 2M Electronic Rework Power Units and auxiliary 2M equipment in the 2M/MTR/FOTR database.

2M Station	#1	Serial Number
Certification Level	MC <i>or</i> MN	
Power Unit	PRC-2000 <i>or</i> MBT-250	
Microscope	Meiji <i>or</i> OC White	
Light Source	Techniquip	
LED Ring Light	OC White	
Portable Power Unit	ST-25	
ESD Constant Monitor	3M 724 <i>or</i> SCS 724	
Workbench	VIDMAR <i>or</i> Benelex	
Location		
Work Center		

MTR Station	#1	Serial Number
Nomenclature	AN/USM-726(V)1	
Controller	AS-3000	N64281####
Monitor	NEC	
MTR Test Equipment	Model 32	DA1-####
Scanner	Huntron	340-####
MTR Foot Pedal	X-Key	
ESD Constant Monitor	3M 724 <i>or</i> SCS 724	
Workbench	VIDMAR <i>or</i> Benelex	
Location		
Work Center		

- b. *2M/MTR Repair Site* has all 2M/MTR consumables, tools and support equipment in accordance with reference (b), Appendix F.

OR

- b. The following 2M/MTR consumables, tools and/or support equipment are missing or damaged and require replacement:

Nomenclature	NSN / PN

1. The following 2M/MTR consumables, tools and/or support equipment are missing or damaged but were supplied by *2M/MTR/FOTR Inspector Site*:

Nomenclature	NSN / PN

- c. All 2M/MTR electronics assembly repair equipment is fully operational.

OR

- c. The following 2M/MTR electronics assembly repair equipment is not fully operational.

1. (List deficiencies and disposition).

7. Discussed and evaluated the proposed changes in tools, equipment, techniques and 2M/MTR training curriculum.

- a. (List topics discussed and pertinent information).

8. All equipment used for 2M/MTR repair is supported by an approved Navy Allowance Parts List (APL)

OR

8. All equipment used for 2M/MTR repair is not supported by an approved Navy Allowance Parts List (APL). Submit a COSAL feedback report to add APL ##### to *2M/MTR Repair Site's* configuration.

9. All equipment used for 2M/MTR repair is included in the command's preventive maintenance program.

OR

9. Not all support equipment used for 2M/MTR repair is included in the command's preventive maintenance program. Submit a PMS Feedback Report (FBR) to add MIP 6652/002 and/or MIP 4911/003 to *2M/MTR Work Center*.

10. *2M/MTR Repair Site Location* meets the facility requirements for 2M/MTR electronics assembly repair.

OR

10. *2M/MTR Repair Site Location* does not meet the following facility requirements for 2M/MTR electronics assembly repair:

b. (List deficiencies).

11. *2M/MTR Repair Site* meets the workbench requirements for 2M/MTR electronics assembly repair.

OR

11. *2M/MTR Repair Site* does not meet the following workbench requirements for 2M/MTR electronics assembly repair.

a. (List deficiencies).

12. All applicable 2M/MTR documentation is at or near the workstation.

13. *2M/MTR Work Center* has all the materials required for electrostatic discharge (ESD) prevention and is following proper ESD procedures.

OR

13. *2M/MTR Work Center* does not have the following materials required for electrostatic discharge (ESD) prevention and is not following proper ESD procedures:

a. (List deficiencies).

14. 2M/MTR maintenance actions and piece parts usage are being documented in accordance with established procedures via the Module Test and Repair Tracking System (MTRTS)

a. During the review, *2M/MTR/FOTR Inspector Site* measured the overall effectiveness of *2M/MTR Repair Site's* 2M/MTR Program. References (c) and (d) require all circuit card assemblies (CCAs) and electronic modules (EMs) to be screened and documented by the 2M/MTR work center, regardless of COG or Source, Maintenance, and Recoverability (SM&R) code. Documentation should include time spent on CCAs and EMs that were not repairable. Supply Officers are authorized to delay stock issue, replenishment and non-RFI turn-in for up to 72 hours pending testing and repair. Supply requisition data was compared to the MTRTS data for all CCAs and EMs purchased since the last 2M/MTR certification, the following summarizes the findings:

a. CCAs and EMs Screened Through 2M/MTR Work Center	
b. CASREPS averted	
c. 2M Repair Cost Avoidance	
d. Total Number of CCAs and EMs Purchased	
e. Gold Disk Supported CCAs and EMs Purchased	
f. Gold Disk Supported CCAs and EMs requisitioned as CASREPS	
g. Potential Cost Avoidance Missed	
h. Rate of Effectiveness $a/(a + d)$	

OR

- a. Due to *2M/MTR Repair Site* being exempt from MTR reporting since the last 2M/MTR certification, *2M/MTR/FOTR Inspector Site* did not measure the command's 2M/MTR Program effectiveness. References (c) and (d) require all circuit card assemblies (CCAs) and electronic modules (EMs) to be screened and documented by the 2M/MTR work center, regardless of COG or Source, Maintenance, and Recoverability (SM&R) code. Documentation should include time spent on CCAs and EMs that were not repairable. Supply Officers are authorized to delay stock issue, replenishment and non-RFI turn-in for up to 72 hours pending testing and repair. Effectiveness is measured by comparing requisition data from Supply to the MTRTS data for all CCAs and EMs purchased since the last 2M/MTR certification and would show the following:

a. CCAs and EMs Screened Through 2M/MTR Work Center	
b. CASREPS averted	
c. 2M Repair Cost Avoidance	
d. Total Number of CCAs and EMs Purchased	
e. Gold Disk Supported CCAs and EMs Purchased	
f. Gold Disk Supported CCAs and EMs requisitioned as CASREPS	
g. Potential Cost Avoidance Missed	
h. Rate of Effectiveness $a/(a + d)$	

OR

- a. Due to this being an initial certification, *2M/MTR/FOTR Inspector Site* did not measure the command's 2M/MTR Program effectiveness. References (c) and (d) require all circuit card assemblies (CCAs) and electronic modules (EMs) to be screened and documented by the 2M/MTR work center, regardless of COG or Source, Maintenance, and Recoverability (SM&R) code. Documentation should include time spent on CCAs and EMs that were not repairable. Supply Officers are authorized to delay stock issue, replenishment and non-RFI turn-in for up to 72 hours pending testing and repair. Effectiveness is measured by comparing requisition data from Supply to the MTRTS data for all CCAs and EMs purchased since the last 2M/MTR certification and would show the following:

a. CCAs and EMs Screened Through 2M/MTR Work Center	
b. CASREPS averted	
c. 2M Repair Cost Avoidance	
d. Total Number of CCAs and EMs Purchased	
e. Gold Disk Supported CCAs and EMs Purchased	
f. Gold Disk Supported CCAs and EMs requisitioned as CASREPS	
g. Potential Cost Avoidance Missed	
h. Rate of Effectiveness $a/(a + d)$	

OR

14. 2M/MTR maintenance actions and piece parts usage are not being documented in accordance with established procedures via the Module Test and Repair Tracking System (MTRTS).

- a. (List deficiencies).
- b. During the review, *2M/MTR/FOTR Inspector Site* measured the overall effectiveness of *2M/MTR Repair Site's* 2M/MTR Program. References (c) and (d) require all circuit card assemblies (CCAs) and electronic modules (EMs) to be screened and documented by the 2M/MTR work center, regardless of COG or Source, Maintenance, and Recoverability (SM&R) code. Documentation should include time spent on CCAs and EMs that were not repairable. Supply Officers are authorized to delay stock issue, replenishment and non-RFI turn-in for up to 72 hours pending testing and repair. Supply requisition data was compared to the MTRTS data for all CCAs and EMs purchased since the last 2M/MTR certification, the following summarizes the findings:

a. CCAs and EMs Screened Through 2M/MTR Work Center	
b. CASREPS averted	
c. 2M Repair Cost Avoidance	
d. Total Number of CCAs and EMs Purchased	
e. Gold Disk Supported CCAs and EMs Purchased	
f. Gold Disk Supported CCAs and EMs requisitioned as CASREPS	
g. Potential Cost Avoidance Missed	
h. Rate of Effectiveness $a/(a + d)$	

15. 2M repairs are being documented in accordance with OPNAVINST 4790.4 (NAVSEA) *or* COMNAVAIRFORINST 4790.2 (NAVAIR).

OR

15. 2M repairs are not being documented in accordance with OPNAVINST 4790.4 (NAVSEA) *or* COMNAVAIRFORINST 4790.2 (NAVAIR).

16. Supply Department personnel are fully aware of the Progressive Repair Program and policies contained in references (c) and (d).

OR

16. Supply Department personnel are not aware of the Progressive Repair Program and policies contained in references (c) and (d).

17. The following summarizes the findings of this certification:

- a. There were no major deficiencies found.

OR

- a. Major deficiencies: *(EXAMPLES BELOW)*

1. Any deficiency that impacts personnel or equipment safety
2. Missing ESD control capabilities (e.g. missing or defective ESD mat or wrist strap)
3. Any combination of missing tools or inoperable 2M or MTR equipment that would prevent completing 2M/MTR troubleshooting and repair
4. Missing eye protection
5. 2M/MTR site failing to meet the minimum standards of NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M Standard Maintenance Practices for 2M Electronics Assembly Repair, WP003 00, paragraph 04-4.4, 2M Facility Requirements

6. A technician is unable to properly operate the 2M/MTR equipment at their workstation (footswitches, microscope, etc.)
 7. Insufficient quantity of individual power receptacles to support required 2M and/or MTR equipment
 8. Lack of required certified 2M/MTR technicians assigned to each work center
 9. Hazmat specified for repair action or PMS is not available
- b. There were no minor deficiencies.

OR

- b. Minor deficiencies (*EXAMPLES BELOW*)
1. Missing a single size of extractor tip, eyelet, or ball mill.
 2. Missing MTR software revisions.
 3. Any missing or worn test system accessories, outdated software, or other item requiring replacement to support complete MTR Test Station configuration.
 4. Unauthorized software on MTR controller.
 5. Pressure/vacuum working gage out of calibration. Calibrate the compound pressure/vacuum gage in accordance with NAVSEA OD 45845, Metrology Requirements List, Section 1, Paragraphs 24 and 25.
- c. The following action items have been identified and a Plan of Action and Milestones has been developed to address the deficiencies (if required).
1. *2M/MTR Repair Site* will make monthly corrective action progress reports to the 2M/MTR/FOTR Inspector (if required).
- d. General Comments
1. (List comments and/or information, especially not outstanding performance by personnel or the activity, if any.)
 2. (List recommendations for improvement, if any.)
18. As a result of the 2M/MTR Repair Site Certification conducted *DD Month YYYY 2M/MTR Repair Site (Hull ###)* personnel, facilities, and equipment were found to be capable of accomplishing electronics fault isolation and miniature electronics repair *or* microminiature electronics repair in accordance with the Certification Manual for 2M/MTR/FOTR Program, NAVSEA TE000-AA-MAN-010 *or* NAVAIR SE-004-PQS-000, Revision 7 and the 2M/MTR/FOTR Program instruction, COMNAVSEASYS COMINST 4790.17B *or* the Naval Aviation Maintenance Program Instruction, COMNAVAIRFORINST 4790.2C.

OR

18. As a result of the 2M/MTR Repair Site Certification conducted *DD Month YYYY 2M/MTR Repair Site (Hull ###)* personnel, facilities, and equipment were found to be capable of accomplishing electronics fault isolation and not capable of accomplishing miniature electronics repair *or* microminiature electronics repair in accordance with the Certification Manual for 2M/MTR/FOTR Program, NAVSEA TE000-AA-MAN-010 *or* NAVAIR SE-004-PQS-000, Revision 7 and the 2M/MTR/FOTR Program instruction, COMNAVSEASYSCOMINST 4790.17B *or* the Naval Aviation Maintenance Program Instruction, COMNAVAIRFORINST 4790.2C.

OR

18. As a result of the 2M/MTR Repair Site Certification conducted *DD Month YYYY 2M/MTR Repair Site (Hull ###)* personnel, facilities, and equipment were found to be capable of accomplishing miniature electronics repair *or* microminiature electronics repair and not capable of accomplishing electronics fault isolation in accordance with the Certification Manual for 2M/MTR/FOTR Program, NAVSEA TE000-AA-MAN-010 *or* NAVAIR SE-004-PQS-000, Revision 7 and the 2M/MTR/FOTR Program instruction, COMNAVSEASYSCOMINST 4790.17B *or* the Naval Aviation Maintenance Program Instruction, COMNAVAIRFORINST 4790.2C.

OR

18. As a result of the 2M/MTR Repair Site Certification conducted *DD Month YYYY 2M/MTR Repair Site (Hull ###)* personnel, facilities, and equipment were found to be not capable of accomplishing electronics fault isolation *or* miniature electronics repair *or* microminiature electronics repair in accordance with the Certification Manual for 2M/MTR/FOTR Program, NAVSEA TE000-AA-MAN-010 *or* NAVAIR SE-004-PQS-000, Revision 7 and the 2M/MTR/FOTR Program instruction, COMNAVSEASYSCOMINST 4790.17B *or* the Naval Aviation Maintenance Program Instruction, COMNAVAIRFORINST 4790.2C.
19. An out brief was conducted with *Rank Name, Title; Rank Name, Title; and Name, Title.*

2M/MTR/FOTR Inspector Name

Appendix M

FOTR Repair Site Certification Letter/Enclosure Template

From: Commanding Officer, *FOTR Inspector Site*
To: Commanding Officer, *FOTR Repair Site (HULL ###), Address*
(*Fiber Optic Repair Site POC, Code ####, if required*)

Subj: CERTIFICATION OF FIBER OPTIC TEST AND REPAIR (FOTR) REPAIR
SITE, *FOTR REPAIR SITE*

Ref: (a) NAVSEA TE000-AA-MAN-010/2M, Revision 7, Certification
Manual for Miniature/Microminiature Electronics Module
Test and Repair/Fiber Optic Test and Repair
(2M/MTR/FOTR) Program or
(a) NAVSEAINST 4790.17B, Miniature/Microminiature Module
Test and Repair (2M/MTR/FOTR) Program
(b) COMFLTFORCOMINST 4790.3, Joint Fleet Maintenance Manual
(c) NAVSUP Publication 485, Operational Forces Supply
Procedures or Naval Supply Procedures Ashore

Encl: (1) FOTR Repair Site Certification Report for *FOTR Repair*
Site (DD Month YYYY)
(2) FOTR Repair Site Certification Certificate

1. A Fiber Optic Test and Repair (FOTR) Repair Site Certification
of *FOTR Repair Site (HULL ###)* was conducted by *FOTR Inspector*
Site representative *FOTR Inspector Name* on *DD-DD Month YYYY*. The
results of the FOTR Repair Site Certification are provided in
enclosure (1). The FOTR Repair Site Certification Certificate is
provided in enclosure (2).

2. The new certification expiration date is *DD Month YYYY*.

3. *FOTR Inspector Site* evaluated the *FOTR Repair Site* FOTR program
in accordance with references (a) and (b). The FOTR work center
is being utilized, however not to the fullest extent or is being
effectively utilized or is being very effectively utilized. This
evaluation is based on *FOTR Repair Site's* percentage of screening
effectiveness which is calculated to be *##%* since the last FOTR
certification. The FOTR work center contributes significantly to
the operational readiness and provides substantial cost savings to
FOTR Repair Site. *FOTR Technician Rank Name* should be commended
for their outstanding efforts.

OR

3. *FOTR Inspector Site* evaluated the *FOTR Repair Site* FOTR program in accordance with references (a) and (b). The FOTR work center is not being utilized. This evaluation is based on *FOTR Repair Site* percentage of screening effectiveness which is calculated to be 0% since the last FOTR certification. Effective use of the FOTR work center will increase the command's operational readiness and prove substantial cost savings. Details on measuring program effectiveness and recommendations for improving *FOTR Repair Site's* FOTR Program are detailed in enclosure (1).

OR

3. Due to *FOTR Repair Site's* exemption from MTRTS reporting during the last ## months, *FOTR Inspector Site* did not evaluate the effectiveness of *FOTR Repair Site's* FOTR Program. Effective use of the FOTR work center will increase the command's operational readiness and provide substantial cost savings.

4. *FOTR Inspector Site* point of contact is *FOTR Inspector Name*, available at DSN ###-### or commercial ###-###-#### and by email at first.last@us.navy.mil.

Signature

Name

By direction

Copy to:

FOTR Repair Site Certification

1. Activity/UIC: *FOTR Repair Site (Hull ###) / 2M UIC*
2. Dates of Certification: *DD-DD Month YYYY*
3. Certification Activity: *FOTR Inspector Site, FOTR Inspector Name*
4. An arrival brief was conducted with *Rank Name, Title; Rank Name, Title; and Name, Title*
5. FOTR Technicians:

NAME	RATE	Work Center	PRD	Certification Level	Certification Expiration

- a. *FOTR Technician* has an expired FOTR certification and is not authorized to conduct FOTR test and repair.
 - b. FOTR Technicians with expired FOTR certifications need to be scheduled for recertification. Recertification services are available through *FOTR Inspector Site Code ### at (###)-###-####*.
6. Inventoried FOTR consumables, tools and support equipment in accordance with Appendix F.
 - a. Documented the serial numbers and locations of FOTR equipment in the 2M/MTR/FOTR database.

FOTR Work Center		
Location		
Work Center		
	Model/MFG	Serial Number
<i>Populate with Toolkits per AEL</i>		
<i>Populate with Test Equipment per TMDE</i>		
<i>Populate with MQJs per AEL</i>		

- b. *FOTR Repair Site* has all FOTR consumables, tools and support equipment in accordance with reference (a), Appendix F.

OR

- c. The following FOTR consumables, tools and/or support equipment are missing or damaged and require replacement:

Nomenclature	NSN / PN

AND/ OR

- c. The following FOTR consumables, tools and/or support equipment are missing or damaged but were supplied by *FOTR Inspector Site*:

Nomenclature	NSN / PN

- d. All FOTR test equipment is fully operational.

OR

- d. The following FOTR test equipment is not fully operational.

1. (List deficiencies and disposition).

7. Discussed and evaluated the proposed changes in tools, equipment, techniques and FOTR training curriculum.

- a. (List topics discussed and pertinent information).

8. All equipment used for FOTR repair is supported by an approved Navy Allowance Parts List (APL)

OR

8. All equipment used for FOTR repair is not supported by an approved Navy Allowance Parts List (APL). Submit a COSAL feedback report to add APL ##### to *FOTR Repair Site*'s configuration.

9. *FOTR Repair Site Location* meets the facility requirements for FOTR repair.

OR

9. *FOTR Repair Site Location* does not meet the following facility requirements for FOTR repair:

- b. (List deficiencies).

10. All applicable FOTR documentation is at or near the workstation.

11. FOTR maintenance actions and consumables usage are being documented in accordance with established procedures via the Module Test and Repair Tracking System (MTRTS)

OR

11. FOTR maintenance actions and piece parts usage are not being documented in accordance with established procedures via the Module Test and Repair Tracking System (MTRTS).

- a. (List deficiencies).

12. The following summarizes the findings of this certification:

- a. There were no major deficiencies found.

OR

- a. Major deficiencies: *(EXAMPLES BELOW)*
 - 1. Any deficiency that impacts personnel or equipment safety
 - 2. Any combination of missing tools or inoperable FOTR equipment that would prevent completing FOTR troubleshooting and repair
 - 3. Missing eye protection
 - 4. A technician is unable to properly operate the FOTR test equipment at their workstation
 - 5. Lack of required certified FOTR technicians assigned to each work center
 - 6. Hazmat specified for training or PMS is not available
- b. There were no minor deficiencies.

OR

- b. Minor deficiencies *(EXAMPLES BELOW)*
 - 1. Missing non-critical fiber optic tools.
 - c. The following action items have been identified and a Plan of Action and Milestones has been developed to address the deficiencies (if required).
 - 1. *FOTR Repair Site* will make monthly corrective action progress reports to the FOTR Inspector (if required).
 - d. General Comments
 - 1. (List comments and/or information, especially not outstanding performance by personnel or the activity, if any.)
 - 2. (List recommendations for improvement, if any.)
13. As a result of the FOTR Repair Site Certification conducted *DD Month YYYY FOTR Repair Site (Hull ###)* personnel, facilities, and equipment were found to be capable of accomplishing fiber optic fault isolation, testing, and repair in accordance with the Certification Manual for 2M/MTR/FOTR Program, NAVSEA TE000-AA-MAN-010 *or* NAVAIR SE-004-PQS-000, Revision 7 and the 2M/MTR/FOTR Program instruction, COMNAVSEASYS COMINST 4790.17B

OR

13. As a result of the FOTR Repair Site Certification conducted *DD Month YYYY FOTR Repair Site (Hull ###)* personnel, facilities, and equipment were found to be capable of accomplishing fiber optic fault isolation and testing but not capable of accomplishing fiber optic repair in accordance with the Certification Manual for 2M/MTR/FOTR Program, NAVSEA TE000-AA-MAN-010, Revision 7 and the 2M/MTR/FOTR Program instruction, COMNAVSEASYS COMINST 4790.17B.

OR

13. As a result of the FOTR Repair Site Certification conducted *DD Month YYYY FOTR Repair Site (Hull ###)* personnel, facilities, and equipment were found to be capable of accomplishing fiber optic repair and not capable of fiber optic fault isolation or testing in accordance with the Certification Manual for 2M/MTR/FOTR Program, NAVSEA TE000-AA-MAN-010, Revision 7 and the 2M/MTR/FOTR Program instruction, COMNAVSEASYS COMINST 4790.17B.

OR

13. As a result of the FOTR Repair Site Certification conducted *DD Month YYYY 2M/MTR Repair Site (Hull ###)* personnel, facilities, and equipment were found to be not capable of accomplishing fiber optic fault isolation and testing or fiber optic repair in accordance with the Certification Manual for 2M/MTR/FOTR Program, NAVSEA TE000-AA-MAN-010, Revision 7 and the 2M/MTR/FOTR Program instruction, COMNAVSEASYS COMINST 4790.17B.

14. An out brief was conducted with *Rank Name, Title; Rank Name, Title; and Name, Title.*

FOTR Inspector Name

Appendix N

2M Training Site Certification Letter/Enclosure Template

From: Commander, Naval Sea Systems Command

To: Officer in Charge, *2M Training Site, Address (2M Training Site POC, Code ####, if required)*

Subj: CERTIFICATION OF MINIATURE/MICROMINIATURE (2M) TRAINING SITE, *2M TRAINING SITE*

Ref: (a) NAVSEA TE000-AA-MAN-010/2M, Revision 7, Certification Manual for Miniature/Microminiature Electronics Module Test and Repair/Fiber Optic Test and Repair (2M/MTR/FOTR) Program or

(b) NAVAIR SE-004-PQS-000, Revision 7, Certification Manual for Miniature/Microminiature Electronics Module Test and Repair/Fiber Optic Test and Repair (2M/MTR/FOTR) Program

(c) NAVSEAINST 4790.17B, Miniature/Microminiature Module Test and Repair (2M/MTR/FOTR) Program or

(e) COMNAVAIRFORINST 4790.2C, The Naval Aviation Maintenance Program or

(f) COMDTINST 4790.2D Coast Guard Miniature/Microminiature (2M)/Module Test and Repair (MTR) Program

Encl: (1) 2M Training Site Certification Report for *2M Training Site (DD Month YYYY)*

(2) 2M Training Site Certification Certificate

1. NUWC Keyport conducted a Miniature/Microminiature (2M) Training Site Certification of the *2M Training Site* on *DD-DD Month YYYY*. *2M Training Site* personnel, facilities, and equipment were found to be capable of conducting the Miniature Electronics Repair, Microminiature Electronics Repair, 2M Technician Recertifier, 2M Technician Recertifier Requalification, 2M Instructor Initial Skills and 2M Instructor Qualification/Requalification courses of instruction in accordance with references (a) and (b). The results of this 2M Training Site Certification are provided in enclosure (1).

2. The new certification expiration date is *DD Month YYYY*.

3. NUWC Det FEO Norfolk (2M Certification Agent) point of contact is *2M Certification Agent Name* (2525), available at DSN ###-### or commercial ###-###-#### and by email at first.last.civ@us.navy.mil. The NAVSEA 2M/MTR/FOTR Program Manager is Mr. Richard Stark (SEA 09MM35), available at 202-781-1491 and *Richard.r.stark.civ@us.navy.mil*.

Signature

Name

By direction

Copy to:

2M Training Site Certification

1. Activity/UIC: *2M Training Site/2M UIC*
2. Dates of Certification: *DD-DD Month YYYY*
3. Certification Activity: NUWC Det FEO Norfolk (CRTA), Certification Agent *Name*
4. An arrival brief was conducted with *Rank Name, Title; Rank Name, Title; and Name, Title.*
5. 2M Instructors:

NAME	RATE	PRD	Certification Level	Certification Expiration

6. Inventoried 2M equipment in accordance with reference (b), Appendix F and verified operation of 2M equipment in accordance with reference (b), Appendix I.
 - a. Documented the serial numbers and locations of the 2M Electronic Rework Power Units and auxiliary 2M equipment in the 2M/MTR/FOTR database.
 - b. *2M Training Site* has all required consumables, tools and support equipment.

OR

- b. The following tools and/or materials are missing or damaged and require replacement:
 1. (List deficiencies).
- c. All 2M training equipment is fully operational.

OR

- c. The following 2M training equipment is not fully operational.
 1. (List deficiencies and disposition).
7. Discussed the following proposed changes to training curriculum, tools, equipment, techniques, and documentation.
 - a. (List topics discussed and pertinent information).
 8. *2M Training Site* has an ample supply of 2M training material and consumables.

OR

8. *2M Training Site* is in short supply and/or missing the following 2M training material and/or consumables.

a. (List deficiencies).

9. *2M Training Site* meets the facility requirements for 2M/MTR electronics assembly repair.

a. A copy of the current Industrial Hygiene Survey was provided by *2M Training Site*.

OR

9. *2M Training Site* does not meet the facility requirements for 2M/MTR electronics assembly repair

a. (List deficiencies).

b. A copy of the current Industrial Hygiene Survey was provided by *2M Training Site*.

10. *2M Training Site* meets the workbench requirements for 2M/MTR electronics assembly repair.

OR

10. *2M Training Site* does not meet the following workbench requirements for 2M/MTR electronics assembly repair.

a. (List deficiencies)

11. *2M Training Site* has access to the 2M/MTR/FOTR SharePoint site for current 2M curricula and documentation.

12. Administrator's guides, lesson plans, performance tests, trainee guides, and audiovisual aids are current, including updates and redlines, and available for all 2M courses.

13. Record of *2M Training Site's* 2M training conducted since the last certification:

2M Course	A-100-0072	A-100-0073	A-100-0058	A-100-0144	A-100-0135	A-100-0136
Training quotas available						
Quotas utilized/%						
Technicians certified/%						
Attrition Rate %						

14. *2M Training Site* classroom(s) meet(s) the Miniature Electronics Repair Training and/or Microminiature Electronics Repair training capability.

OR

14. *2M Training Site* classroom(s) do not meet the Miniature Electronics Repair Training and/or Microminiature Electronics Repair training capability

a. (List deficiencies).

15. *2M Training Site* 2M Instructors meet all certification requirements.

OR

15. *2M Training Site* 2M Instructors do not meet all certification requirements.

a. (List discrepancies and remedial actions)

16. 2M Instructor Evaluations:

NAME	COURSE	TOPIC	EVALUATOR	CRITIQUE COMMENTS

a. (List unsatisfactory evaluations and results of remediation or assignment of formal remediation, if any).

17. The following summarizes the findings of this certification:

a. There were no major deficiencies.

OR

a. Major Deficiencies (*EXAMPLES BELOW*)

1. Any discrepancy that impacts personnel or equipment safety
2. Missing ESD control capabilities
3. Any combination of missing tools, insufficient quantities of consumables, or inoperable equipment that would preclude instructing and/or completing a course task
4. Training site failing to meet minimum facility requirements
5. Training site failing to meet requirements for Miniature Electronics Repair and/or Microminiature Electronics Repair training
6. Hazmat specified for training or PMS is not available

b. There are no minor deficiencies.

OR

- b. Minor Deficiencies (*EXAMPLES BELOW*)
 - 1. Missing a single extractor tip, dental tool or ball mill
- c. The following action items have been identified and a Plan of Action and Milestones has been developed to address the deficiencies (if required).
 - 1. 2M Training Site will make monthly corrective action progress reports to the 2M Certification Agent (if required).
- d. General Comments
 - 1. (List comments, and/or information especially not outstanding performance by personnel or the activity, if any.)
 - 2. (List recommendations for improvement, if any.)

18. As a result of the 2M Training Site Certification conducted *DD Month YYYY 2M Training Site* personnel, facilities, and equipment were found to be capable of conducting the Miniature Electronics Repair, Microminiature Electronics Repair, 2M Technician Recertifier, 2M Technician Recertifier Requalification, 2M Instructor Initial Skills and 2M Instructor Certification/Recertification courses of instruction in accordance with the Certification Manual for 2M/MTR/FOTR Program, NAVSEA TE000-AA-MAN-010 or NAVAIR SE-004-PQS-000, Revision 7 and the 2M/MTR/FOTR Program instruction, COMNAVSEASYS COMINST 4790.17B or Naval Aviation Maintenance Program Instruction, COMNAVAIRFORINST 4790.2C.

19. A departure brief was conducted with *Rank Name Title; Rank Name, Title, and Name, Title.*

2M Certification Agent Name

Appendix O

MTR Training Site Certification Letter/Enclosure Template

From: Commander, Naval Sea Systems Command
To: Commanding Officer, *MTR Training Site*, Address (*MTR Training Site POC*, Code ####, if required)
Subj: CERTIFICATION OF MODULE TEST AND REPAIR (MTR) TRAINING SITE, *MTR TRAINING SITE*
Ref: (a) NAVSEA TE000-AA-MAN-010/2M, Revision 7, Certification Manual for Miniature/Microminiature Electronics Module Test and Repair/Fiber Optic Test and Repair (2M/MTR/FOTR) Program or
(a) NAVAIR SE-004-PQS-000, Revision 7, Certification Manual for Miniature/Microminiature Electronics Module Test and Repair/Fiber Optic Test and Repair (2M/MTR/FOTR) Program
(b) NAVSEAINST 4790.17B, Miniature/Microminiature Electronics Module Test and Repair (2M/MTR/FOTR) Program or
(b) COMNAVAIRFORINST 4790.2C, The Naval Aviation Maintenance Program or
(b) COMDTINST 4790.2D Coast Guard Miniature/Microminiature (2M)/Module Test and Repair (MTR) Program
Encl: (1) MTR Training Site Certification Report for *MTR Training Site* (DD Month YYYY)
(2) MTR Training Site Certification Certificate
1. NUWC Det FEO Norfolk conducted a Module Test and Repair (MTR) Training Site Certification of *MTR Training Site* on DD-DD Month YYYY. *MTR Training Site* personnel, facilities, and equipment were found to be capable of conducting the Module Test and Repair Equipment Operator course of instruction in accordance with references (a) and (b). The results of the MTR Training Site Certification are provided in enclosure (1).
2. The new certification expiration date is DD Month YYYY.
3. NUWC Det FEO Norfolk (MTR Certification Agent) point of contact is *MTR Certification Agent Name* (2525), available at DSN ###-### or commercial ###-###-#### and by email at first.last@us.navy.mil. The NAVSEA 2M/MTR/FOTR Program Manager is Mr. Richard Stark (SEA 09MM35), available at 202-781-1491 and *Richard.R.Stark1@us.navy.mil*.

Signature

Name

By direction

Copy to:

MTR Training Site Certification

1. Activity/UIC: *MTR Training Site/UIC*
2. Dates of Certification: *DD-DD Month YYYY*
3. Certification Activity: NUWC Det FEO Norfolk (CRTB), Certification Agent *Name*
4. An arrival brief was conducted with *Rank Name, Title; Rank Name, Title; and Name, Title.*
5. MTR Instructors:

NAME	RATE	PRD	Certification Level	Certification Expiration

6. Inventoried MTR equipment and accessories in accordance with Appendix F and verified operation of MTR equipment in accordance with Appendix I.
 - a. Documented the serial numbers, quantities and locations of the AN/USM-674/726 (V) Test Station equipment in the 2M/MTR/FOTR database.
 - b. *MTR Training Site* has all required equipment and accessories.

OR

- b. The following equipment and/or accessories are missing or damaged and require replacement:
 1. (List deficiencies).
- c. All MTR training equipment is fully operational.

OR

- c. The following MTR training equipment is not fully operational.
 1. (List deficiencies and disposition).
7. Discussed the following proposed changes to training curriculum, tools, equipment, techniques, and documentation.
 - a. (List topics discussed and pertinent information).
8. *MTR Training Site* has ample supply of MTR training boards and the current MTR test routines and software.

OR

8. *MTR Training Site* is in short supply and/or missing the following MTR training boards
- a. (List deficiencies).
9. *MTR Training Site* meets the facility requirements for 2M/MTR electronics assembly repair.
- a. A copy of the current Industrial Hygiene Survey was provided by *MTR Training Site*.

OR

9. *MTR Training Site* does not meet the facility requirements for 2M/MTR electronics assembly repair.
- a. (List deficiencies).
 - b. A copy of the current Industrial Hygiene Survey was provided by *MTR Training Site*.
10. *MTR Training Site* meets the workbench requirements for 2M/MTR electronics assembly repair.

OR

10. *MTR Training Site* does not meet the workbench requirements for 2M/MTR electronics assembly repair.
- a. (List deficiencies).
11. *MTR Training Site* has access to the 2M/MTR/FOTR SharePoint site for current MTR curricula and documentation.
12. A-100-0076 Module Test and Repair Equipment Operator administrator's guides, lesson plans, performance tests, trainee guides, and audiovisual aids are current, including updates and redlines, and available.
13. Record of *MTR Training Site's* record of MTR training since the last certification:

Course	A-100-0076
Training quotas available	
Quotas utilized/%	
Technicians certified/%	
Attrition Rate %	

14. *MTR Training Site* classroom meets MTR Training capability requirements.

OR

14. *MTR Training Site* classroom does not meet MTR Training capability requirements.

a. (List deficiencies).

15. *MTR Training Site* MTR Instructors meet all certification requirements.

OR

15. *MTR Training Site* MTR Instructors meet all certification requirements.

a. (List discrepancies and remedial actions.)

16. MTR Instructor Evaluations:

NAME	COURSE	TOPIC	EVALUATOR	CRITIQUE COMMENTS

a. (List unsatisfactory evaluations and results of remediation or assignment of formal remediation, if any).

17. The following summarizes the findings of this certification:

a. There were no major deficiencies.

OR

a. Major Deficiencies (*EXAMPLES BELOW*)

1. Insufficient number of MTR Instructors to maintain the proper instructor to student ratios required by the number of training site classrooms.
2. Missing ESD control capabilities.
3. Any combination of missing tools or inoperable equipment that would preclude instructing and/or completing a course task
4. Training site failing to meet minimum facility requirements.
5. Training site failing to meet requirements for Module Test and Repair Equipment Operator training.

b. There are no minor deficiencies.

OR

- b. Minor Deficiencies (*EXAMPLES BELOW*)
 - 1. Missing current MTR software revision
 - 2. Missing or worn test system accessories, outdated software, or other item requiring replacement to support complete MTR Test Station configuration
 - c. The following action items have been identified and a Plan of Action and Milestones has been developed to address the deficiencies (if required).
 - 1. *MTR Training Site* will make monthly corrective action progress reports to the MTR Certification Agent (if required).
 - d. General Comments
 - 1. (List comments and/or information, especially not outstanding performance by personnel or the activity, if any.)
 - 2. (List recommendations for improvement, if any.)
23. As a result of the MTR Training Site Certification conducted *DD Month YYYY MTR Training Site* personnel, facilities, and equipment were found to be capable of conducting the Module Test and Repair Equipment Operator course of instruction in accordance with the Certification Manual for 2M/MTR/FOTR Program, NAVSEA TE000-AA-MAN-010 or NAVAIR SE-004-PQS-000, Revision 7 and the 2M/MTR/FOTR Program instruction, COMNAVSEASYS COMINST 4790.17B or Naval Aviation Maintenance Program Instruction, COMNAVAIRFORINST 4790.2C.
24. A departure brief was conducted with *Rank Name, Rank Name, and Name*.

MTR Certification Agent Name

Appendix P

FOTR Training Site Certification Letter/Enclosure Template

From: Commander, Naval Sea Systems Command
To: Officer in Charge, *FOTR Training Site*, Address (*FOTR Training Site POC*, Code ####, if required)

Subj: CERTIFICATION OF FIBER OPTIC TEST AND REPAIR TRAINING SITE,
FOTR TRAINING SITE

Ref: (a) NAVSEA TE000-AA-MAN-010/2M, Revision 7, Certification Manual for Miniature/Microminiature Electronics Module Test and Repair/Fiber Optic Test and Repair (2M/MTR/FOTR) Program

Encl: (1) FOTR Training Site Certification Report for *FOTR Training Site* (DD Month YYYY)
(2) FOTR Training Site Certification Certificate

1. NSWC Dahlgren Division conducted a Fiber Optic Test and Repair (FOTR) Training Site Certification of the *FOTR Training Site* on DD-DD Month YYYY. *FOTR Training Site* personnel, facilities, and equipment were found to be capable of conducting the Fiber Optic Maintenance Technician course of instruction in accordance with references (a) and (b). The results of this FOTR Training Site Certification are provided in enclosure (1).

2. The new certification expiration date is DD Month YYYY.

3. NSWC Dahlgren Division (FOTR Certification Agent) point of contact is *FOTR Certification Agent Name*, available at DSN ###-### or commercial ###-###-#### and by email at first.last.civ@us.navy.mil. The NAVSEA 2M/MTR/FOTR Program Manager is Mr. Richard Stark (SEA 09MM35), available at 202-781-1491 and *Richard.r.stark.civ@us.navy.mil*.

Signature

Name

By direction

Copy to:

FOTR Training Site Certification

1. Activity/UIC: *FOTR Training Site/2M UIC*
2. Dates of Certification: *DD-DD Month YYYY*
3. Certification Activity: NSWC Dahlgren (CRTC), Certification Agent *Name*
4. An arrival brief was conducted with *Rank Name, Title; Rank Name, Title; and Name, Title.*
5. FOTR Instructors:

NAME	RATE	PRD	Certification Level	Certification Expiration

6. Inventoried FOTR equipment in accordance with the 2M/MTR/FOTR Workstation Checklist (Appendix F).
 - a. Documented the serial numbers and locations of the FOTR Test Equipment and Fusion Splicer in the 2M/MTR/FOTR database.
 - b. *FOTR Training Site* has all required consumables, tools and support equipment in accordance with approved RRL and Appendix F.

OR

- b. The following tools and/or materials are missing or damaged and require replacement:
 1. (List deficiencies).
- c. All FOTR training equipment is fully operational.

OR

- c. The following FOTR training equipment is not fully operational.
 1. (List deficiencies and disposition).
7. Discussed the following proposed changes to training curriculum, tools, equipment, techniques, and documentation.
 - a. (List topics discussed and pertinent information).
8. *FOTR Training Site* has an ample supply of FOTR training material and consumables.

OR

8. *FOTR Training Site* is in short supply and/or missing the following FOTR training material and/or consumables.
 - a. (List deficiencies).
9. *FOTR Training Site* meets the workbench requirements for Fiber Optic test and repair.

OR

9. *FOTR Training Site* does not meet the following workbench requirements for Fiber Optic test and repair.
 - a. (List deficiencies)
10. *FOTR Training Site* has access to the NSWC Dahlgren Fiber Optic website and the 2M/MTR/FOTR SharePoint site for FOTR documentation.
11. Administrator's guides, lesson plans, performance tests, trainee guides, and audiovisual aids are current, including updates and redlines, and available for all FOTR courses.
12. Record of *FOTR Training Site's* FOTR training conducted since the last certification:

FOTR Course	A-670-0063
Training quotas available	
Quotas utilized/%	
Technicians certified/%	
Attrition Rate %	

13. *FOTR Training Site* classroom(s) meet(s) the Fiber Optic Test and Repair training capability.

OR

13. *FOTR Training Site* classroom(s) do not meet the Fiber Optic Test and Repair training capability
 - a. (List deficiencies).
14. *FOTR Training Site* FOTR Instructors meet all certification requirements.

OR

14. *FOTR Training Site* FOTR Instructors do not meet all certification requirements.
 - a. (List discrepancies and remedial actions)

15. FOTR Instructor Evaluations:

NAME	COURSE	TOPIC	EVALUATOR	CRITIQUE COMMENTS

- a. (List unsatisfactory evaluations and results of remediation or assignment of formal remediation, if any).

16. The following summarizes the findings of this certification:

- a. There were no major deficiencies.

OR

- a. Major Deficiencies (*EXAMPLES BELOW*)

- Any discrepancy that impacts personnel or equipment safety
- Any combination of missing tools, insufficient quantities of consumables, or inoperable equipment that would preclude instructing and/or completing a course task
- Training site failing to meet minimum workbench requirements
- Training site failing to meet requirements for Fiber Optic Test and Repair training
- Hazmat specified for training or PMS is not available

- b. There are no minor deficiencies.

OR

- b. Minor Deficiencies (*EXAMPLES BELOW*)

- (list deficiencies)
- c. The following action items have been identified and a Plan of Action and Milestones has been developed to address the deficiencies (if required).
- FOTR Training Site will make monthly corrective action progress reports to the FOTR Certification Agent (if required).

d. General Comments

1. (List comments, and/or information especially not outstanding performance by personnel or the activity, if any.)
 2. (List recommendations for improvement, if any.)
17. As a result of the FOTR Training Site Certification conducted *DD Month YYYY FOTR Training Site* personnel, facilities, and equipment were found to be capable of conducting the FOTR Maintenance Technician course of instruction in accordance with the Certification Manual for 2M/MTR/FOTR Program, NAVSEA TE000-AA-MAN-010, Revision 7 and the 2M/MTR/FOTR Program instruction, COMNAVSEASYS COMINST 4790.17B .
18. A departure brief was conducted with *Rank Name Title; Rank Name, Title, and Name, Title.*

FOTR Certification Agent Name

Appendix Q

2M/MTR/FOTR Inspector Site Certification Letter/Enclosure Template

From: Commander, Naval Sea Systems Command or Commanding Officer,
Southeast Regional Maintenance Center or Commanding
Officer, Southwest Regional Maintenance Center
To: Commanding Officer or Officer-In-Charge, 2M/MTR/FOTR
Inspector Site, Address (2M/MTR/FOTR Inspector Site POC,
Code ####, if required)

Subj: CERTIFICATION OF MINIATURE/MICROMINIATURE ELECTRONICS
MODULE TEST AND REPAIR AND/OR FIBER OPTIC TEST AND REPAIR
(2M/MTR/FOTR) INSPECTOR SITE, 2M/MTR/FOTR INSPECTOR SITE

Ref: (a) NAVSEA TE000-AA-MAN-010/2M, Revision 7, Certification
Manual for Miniature/Microminiature Electronics Module
Test and Repair/Fiber Optic Test and Repair
(2M/MTR/FOTR) Program
(b) NAVSEAINST 4790.17B, Miniature/Microminiature Module
Test and Repair (2M/MTR/FOTR) Program

Encl: (1) 2M/MTR/FOTR Inspector Site Certification Report for
2M/MTR/FOTR Inspector Site (DD Month YYYY)
(2) 2M/MTR/FOTR Inspector Site Certification Certificate

1. NSWC Dahlgren Det or Southeast Regional Maintenance Center or Southwest Regional Maintenance Center conducted a Miniature/Microminiature Electronics Module Test and Repair (2M/MTR/FOTR) Inspector Site and/or Fiber Optic Test and Repair (FOTR) Certification of 2M/MTR/FOTR Inspector Site on DD-DD Month YYYY. 2M/MTR/FOTR Inspector Site is certified to perform 2M/MTR/FOTR site and 2M/MTR/FOTR personnel certification in accordance with references (a) and (b). The results of this 2M/MTR/FOTR Inspector Site Certification are provided in enclosure (1).

2. The new certification expiration date is DD Month YYYY.

3. NUWC Det FEO Norfolk, NSWC Dahlgren Det, or Southeast RMC or Southwest RMC, 2M Certification Agent, FOTR Certification Agent or 2M/MTR/FOTR Atlantic Fleet Coordinator or 2M/MTR/FOTR Pacific Fleet Coordinator) point of contact is 2M or FOTR Certification Agent Name or 2M/MTR/FOTR Fleet Coordinator Name, available at DSN ###-### or commercial ###-###-#### and by email at first.last@us.navy.mil. The NAVSEA 2M/MTR/FOTR Program Manager is Mr. Richard Stark (SEA 09MM35), available at 202-781-1491 and Richard.r.stark.civ@us.navy.mil. (NAVSEA Program Manager reference required for NUWC Det FEO Norfolk only.)

Signature

Name

NAVSEA TE000-AA-MAN-010/2M
NAVAIR SE-004-PQS-000

Q-2

By direction

Copy to:

2M/MTR/FOTR Inspector Site Certification

1. Activity/UIC: *2M/MTR/FOTR Inspector Site/UIC*
2. Dates of Certification: *DD-DD MONTH YYYY*
3. Certification Activity: *SWRMC, SERMC, NUWC Det FEO Norfolk or NSWC Dahlgren, 2M/MTR/FOTR Fleet Coordinator Name or 2M/MTR/FOTR Certification Agent Name*
4. An arrival brief was conducted with *Rank Name, Title; Rank Name, Title; and Name, Title.*
5. 2M/MTR/FOTR Inspectors:

NAME	RATE	PRD	Certification Level	Certification Expiration

6. *2M/MTR/FOTR Inspector Name* completed 2M/MTR Technician Recertifier Requalification training on *YY- MON- DD*
7. Inventoried 2M equipment in accordance with Appendix F and verified operation of 2M equipment in accordance with Appendix I.
 - a. 2M/MTR/FOTR Inspector Site has all required consumables, tools and support equipment.

OR

- a. The following tools and/or materials are missing or damaged and require replacement:
 1. (List deficiencies).
- b. All 2M/MTR/FOTR recertification equipment is fully operational.

OR

- b. The following 2M/MTR/FOTR recertification equipment is not fully operational
 1. (List deficiencies and disposition)

MTR Station	Station Number	Serial Number
Nomenclature	AN/USM-726V)1	
Controller	AS-3000	N64281####
UPS		
Monitor	NEC	
MTR Test Equipment	Model 32	DA1-#####
MTR Foot Pedal	X-Key	
ESD Constant Monitor	3M 724 <i>or</i> SCS 724	
Workbench	VIDMAR <i>or</i> Benelex	
Location		
Work Center		

7. Documented the serial numbers, quantities and locations of the 2M Electronic Rework Power Units and auxiliary 2M equipment in the 2M/MTR/FOTR database.

2M Station	#1	Serial Number
Certification Level	MC <i>or</i> MN	
Power Unit	PRC-2000 <i>or</i> MBT-250	
Microscope	Meiji <i>or</i> OC White	
Preheater	ST-400 <i>or</i> HS-150	
Light Source	Techniquip/Fostec/Yale	
LED Ring Light	OC White	
Portable Power Unit	ST-25	
ESD Constant Monitor	3M 724 <i>or</i> SCS 724	
Workbench	VIDMAR <i>or</i> Benelex	
Location		
Work Center		

FOTR Station	#1	Serial Number
Certification Level		
Light Duty Kit		
Heavy Duty Kit		
Combination (Submarine) Kit		
OTDR		
OLTS (2)		
Troubleshooting Test Rig		
MQJs		
Spare tooling		
Location		
Work Center		

8. Discussed the following proposed changes to tools, equipment, techniques and 2M, MTR, or FOTR training curriculum.

a. (List topics discussed and pertinent information).

9. *2M/MTR/FOTR Inspector Site* has an ample supply of 2M/MTR/FOTR recertification material.

OR

9. *2M/MTR/FOTR Inspector Site* is in short supply of and/or missing the following 2M/MTR/FOTR recertification material.

a. (List deficiencies).

10. *2M/MTR/FOTR Inspector Site* meets the facility requirements for 2M/MTR/FOTR electronics/fiber optics repair.

OR

10. *2M/MTR/FOTR Inspector Site* does not meet the facility requirements for 2M/MTR/FOTR electronics/fiber optics assembly repair.

a. (List deficiencies).

11. *2M/MTR/FOTR Inspector Site* workbenches meet the requirements for 2M/MTR/FOTR electronics/fiber optics assembly repair.

OR

11. *2M/MTR/FOTR Inspector Site* workbenches do not meet the requirements for 2M/MTR/FOTR electronics/fiber optics assembly repair.

a. (List deficiencies).

12. *2M/MTR/FOTR Inspector Site* has access to the 2M/MTR/FOTR SharePoint site for current 2M/MTR/FOTR documentation.

OR

12. *2M/MTR/FOTR Inspector Site* does not have access to the 2M/MTR/FOTR SharePoint site for current 2M/MTR/FOTR documentation.

13. *2M/MTR/FOTR Inspector Site* Inspector(s) are reporting completion of 2M/MTR/FOTR repair site certifications and 2M/MTR/FOTR personnel certifications in the 2M/MTR/FOTR database.

OR

13. *2M/MTR/FOTR Inspector Site* 2M/MTR/FOTR Inspector(s) are not reporting completion of 2M/MTR/FOTR repair site certifications and 2M/MTR/FOTR personnel certifications in the 2M/MTR/FOTR database.

14. *2M/MTR/FOTR Inspector Site* 2M/MTR/FOTR Inspector(s) have completed the 2M/MTR Inspector JQR.

OR

14. *2M/MTR/FOTR Inspector Site* 2M/MTR/FOTR Inspector(s) have not completed the 2M/MTR/FOTR Inspector JQR.

a. (List deficiencies)

15. Status of delinquent 2M/MTR/FOTR repair sites:

Ship/Site	Cert Due	Comments

16. Accompanied and observed *2M/MTR/FOTR Inspector* performing a satisfactory 2M/MTR/FOTR repair site certification aboard *or* at *2M/MTR/FOTR Repair Site*.

17. The following summarizes the findings of this certification:

a. There are no major deficiencies.

OR

a. Major Deficiencies (*EXAMPLES BELOW*)

1. Missing ESD control capabilities
2. Any combination of missing tools or inoperable 2M, MTR, or FOTR equipment that would prevent completing a 2M, MTR or FOTR recertification
3. Missing eye protection
4. 2M/MTR/FOTR inspector site failing to meet the minimum standards of NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M Standard Maintenance Practices for 2M Electronics Assembly Repair, WP003 00, Facility Requirements
5. A recertifying technician is unable to properly operate the 2M/MTR/FOTR equipment at their workstation (footswitches, microscope, test equipment, etc.)
6. Insufficient quantity of individual power receptacles to support required 2M equipment and/or MTR equipment
7. Missing fiber optic test rig, MQJs, test equipment or any necessary tooling to complete tasks.
8. Hazmat such as conformal coating specified for a repair action or PMS is not available

b. There are no minor deficiencies.

OR

b. Minor Deficiencies (*EXAMPLES BELOW*)

1. Missing a single size of extractor tip, eyelet, or ball mill
2. Missing MTR software revisions
3. Any missing or worn test system accessories, outdated software, or other item requiring replacement to support complete MTR Test Station configuration.
4. Any combination of missing tools or inoperable FOTR equipment that would prevent completing a FOTR recertification
5. Low on FOTR recertification consumables

c. The following action items have been identified and a Plan of Action and Milestones has been developed to address the deficiencies (if required).

1. *2M/MTR/FOTR Inspector Site* will make monthly corrective action progress reports to the 2M/MTR/FOTR Fleet Coordinator *or* 2M/MTR/FOTR Certification Agent (if required).

18. General Comments

- a. (List comments, especially note outstanding performance by personnel or the activity, if any.)
- b. (List recommendations for improvement, if any.)

19. As a result of the 2M/MTR/FOTR Inspector Site Certification conducted *DD-DD MONTH YYYY*, *2M/MTR/FOTR Inspector Site* is certified to conduct 2M/MTR/FOTR Repair Site certifications and 2M/MTR/FOTR technician recertifications in accordance with the Certification Manual for 2M/MTR/FOTR Program, NAVSEA TE000-AA-MAN-010, Revision 7, 2M/MTR/FOTR Program instruction, COMNAVSEASYS COMINST 4790.17B.
20. A departure brief was conducted with *Rank Name, Title; Rank Name, Title; and Name, Title*.

2M, MTR or FOTR Certification Agent Name
2M/MTR/FOTR Atlantic Fleet Coordinator Name or
2M/MTR/FOTR Pacific Fleet Coordinator Name

Appendix R

FOTR Inspector Site Certification Letter Template

From: Commander, Naval Sea Systems Command *or* Commanding Officer,
Southeast Regional Maintenance Center *or* Commanding Officer,
Southwest Regional Maintenance Center
To: Commanding Officer *or* Officer-In-Charge, *FOTR Inspector
Site, Address (FOTR Inspector Site POC, Code ####, if
required)*

Subj: CERTIFICATION OF FIBER OPTIC TEST AND REPAIR (FOTR)
INSPECTOR SITE, *FOTR INSPECTOR SITE*

Ref: (a) NAVSEA TE000-AA-MAN-010/2M, Revision 7, CERTIFICATION
MANUAL FOR MINIATURE/MICROMINIATURE ELECTRONICS MODULE
TEST AND REPAIR/FIBER OPTIC TEST AND REPAIR
(2M/MTR/FOTR) PROGRAM

Encl: (1) FOTR Inspector Site Certification Report for *FOTR
Inspector Site* (DD Month YYYY)
(2) FOTR Inspector Site Certification Certificate

1. NSWC Dahlgren Division *or* Southeast Regional Maintenance
Center *or* Southwest Regional Maintenance Center conducted a Fiber
Optic Test and Repair (FOTR) Inspector Site Certification of *FOTR
Inspector Site* on DD-DD Month YYYY. *FOTR Inspector Site* is
certified to perform FOTR site and FOTR personnel certification in
accordance with references (a) and (b). The results of this FOTR
Inspector Site Certification are provided in enclosure (1).

2. The new certification expiration date is DD Month YYYY.

3. NSWC Dahlgren Division *or* Southeast RMC *or* Southwest RMC (FOTR
Certification Agent *or* 2M/MTR/FOTR Atlantic Fleet Coordinator *or*
2M/MTR/FOTR Pacific Fleet Coordinator) point of contact is *FOTR
Certification Agent Name* *or* *2M/MTR/FOTR Fleet Coordinator Name*,
available at DSN ###-### *or* commercial ###-###-#### and by email
at first.last@us.navy.mil. The NAVSEA 2M/MTR/FOTR Program Manager
is Mr. Richard stark (SEA 09MM35), available at 202-781-1491 and
Richard.r.stark.civ@us.navy.mil.

Signature

Name

By direction

Copy to:

FOTR Inspector Site Certification

1. Activity/UIC: *FOTR Inspector Site/UIC*
2. Dates of Certification: *DD-DD MONTH YYYY*
3. Certification Activity: *NSWC Dahlgren or MARMC or SWRMC, FOTR Certification Agent Name or 2M/MTR/FOTR Fleet Coordinator Name*
4. An arrival brief was conducted with *Rank Name, Title; Rank Name, Title; and Name, Title.*
5. FOTR Inspectors:

NAME	RATE	PRD	Maintainer Training Date	Certification Expiration

6. Inventoried FOTR consumables, tools, and support equipment in accordance with Appendix F.
 - a. *FOTR Inspector Site* has all required consumables, tools and support equipment.

OR

- a. The following tools and/or materials are missing or damaged and require replacement:
 1. (List deficiencies).
- b. Documented the serial numbers, quantities and locations of the FOTR Toolkits and Test equipment in the 2M/MTR/FOTR database.

FOTR Station #1		
Location		
Work Center		
	Model/MFG	Serial Number
<i>Populate with Toolkits per AEL</i>		
<i>Populate with Test Equipment per TMDE</i>		
<i>Populate with MQJs per AEL</i>		

7. Discussed the following proposed changes to tools, equipment, techniques and FOTR training curriculum.

- a. (List topics discussed and pertinent information).

8. *FOTR Inspector Site* has an ample supply of FOTR recertification material.

OR

8. *FOTR Inspector Site* is in short supply of and/or missing the following FOTR recertification material.

- a. (List deficiencies).

9. *FOTR Inspector Site* meets the facility requirements for Fiber Optic Light Duty repair.

OR

9. *FOTR Inspector Site* does not meet the facility requirements for Fiber Optic Light Duty repair.

- a. (List deficiencies).

10. *FOTR Inspector Site* meets the facility requirements for Fiber Optic Heavy Duty repair.

OR

10. *FOTR Inspector Site* does not meet the facility requirements for Fiber Optic Heavy Duty repair.

- a. (List deficiencies).

11. FOTR Inspector Site meets the facility requirements for Fiber Optic Test and Troubleshooting.

OR

11. FOTR Inspector Site does not meet the facility requirements for Fiber Optic Test and Troubleshooting.

- a. (List deficiencies)

12. All applicable FOTR documentation is at or near the workstation.

OR

12. All applicable FOTR documentation is not at or near the workstation.

- a. (List deficiencies).

13. *FOTR Inspector Site* Inspector(s) are reporting completion of FOTR repair site certifications and FOTR personnel certifications in the 2M/MTR/FOTR database.

OR

13. *FOTR Inspector Site* 2M/MTR/FOTR Inspector(s) are not reporting completion of FOTR repair site certifications and FOTR personnel certifications in the 2M/MTR/FOTR database.

14. *FOTR Inspector Site* FOTR Inspector(s) have completed the FOTR Inspector JQR.

OR

14. *FOTR Inspector Site* FOTR Inspector(s) has not completed the FOTR Inspector JQR.

a. (List deficiencies)

15. Status of delinquent FOTR repair sites:

Ship/Site	Cert Due	Comments

16. Accompanied and observed *FOTR Inspector* performing a satisfactory FOTR repair site certification aboard *or* at *FOTR Repair Site*.

17. The following summarizes the findings of this certification:

a. There are no major deficiencies.

OR

a. Major Deficiencies (*EXAMPLES BELOW*)

1. Any combination of missing tools or inoperable FOTR equipment that would prevent completing a FOTR recertification
2. Missing eye protection
3. FOTR inspector site failing to meet the minimum facility requirements for FOTR recertification.

b. There are no minor deficiencies.

OR

b. Minor Deficiencies (*EXAMPLES BELOW*)

1. Non-critical tooling that while missing does not impede completing the repair methods.

- c. The following action items have been identified and a Plan of Action and Milestones has been developed to address the deficiencies (if required).
 - 1. *FOTR Inspector Site* will make monthly corrective action progress reports to the 2M/MTR/FOTR Fleet Coordinator or FOTR Certification Agent (if required).
 - d. General Comments
 - 1. (List comments, especially note outstanding performance by personnel or the activity, if any.)
 - 2. (List recommendations for improvement, if any.)
18. As a result of the FOTR Inspector Site Certification conducted *DD-DD MONTH YYYY*, *FOTR Inspector Site* is certified to conduct FOTR Repair Site certifications and FOTR technician recertifications in accordance with the Certification Manual for 2M/MTR/FOTR Program, NAVSEA TE000-AA-MAN-010, Revision 7 and the 2M/MTR/FOTR Program instruction, COMNAVSEASYS COMINST 4790.17B.
19. A departure brief was conducted with *Rank Name, Title; Rank Name, Title; and Name, Title*.

*FOTR Certification Agent Name or
2M/MTR/FOTR Atlantic Fleet Coordinator Name or
2M/MTR/FOTR Pacific Fleet Coordinator Name*

Appendix S

2M/MTR/FOTR Certification Activity Code List

Activity	Code	Activity	Code
Certification Agents			
NUWC Det FEO Norfolk (2M)	CRTA	NUWC Det FEO Norfolk (MTR)	CRTB
NSWC Dahlgren (FOTR)	CRTC		
Atlantic Fleet Inspectors			
SERMC Mayport	RMAF	MARMC Norfolk	RNOV
FDRMC Rota	RROS		
Pacific Fleet Inspectors			
PSNSY and IMF Det Everett	REVV	PHNSY and IMF Pearl Harbor	RPHH
SWRMC San Diego	RSDC	SRF and JRMCC Yokosuka	RYOJ
Training Commands			
CNATT Det Atsugi	TRAT	372 TRS Det 11 Davis-Monthan AFB	TRDMO
SCSTC Det Southeast	TRMA	SCSTC Hampton Roads, Learning Site Norfolk	TRNO
SCSTC Det Mid-Pac	TRPH	SCSTC Southwest Learning Site San Diego	TRSD
CNATTU Whidbey Island	TRWH	USCG Training Center Yorktown	TRYT
Submarine Support Facilities			
USS EMORY S LAND	AS39	USS FRANK CABLE	AS40
TRF Bangor	TFBA	TRF Kings Bay	TFKB
NAVAIR Depots			
FRC East MCAS Cherry Point	NDCP	FRC Southeast NAS Jacksonville	NDJA
FRC Southwest NAS North Island	NDNI		
NAVAIR FRCs / AIMDs			
FRC West Det Fallon	AFAL	FRC Southeast AIMD Jacksonville	AJAX
FRCR Mid-West Det Forth Worth	AJFW	FRC East Det McGuire-Dix-Lakehurst	AJWG
FRCR Mid-West Det New Orleans	AJNO	FRC West Lemoore	ALEM
FRC Southeast Det Mayport	AMAY	FRC Southwest AIMD North Island	ANOI

FRC Mid-Atlantic Det Norfolk	ANOR	FRC Mid-Atlantic Det Oceana	AOCE
FRC Mid-Atlantic Det Patuxent River	APAX	FRC West Det Point Mugu	APMU
Activity	Code	Activity	Code
NAVAIR FRCs / AIMDs (continued)			
FRC Mid-Lant Det Washington	AWDC	FRC Northwest Whidbey Island	AWHI
AIMD Atsugi	AATS	AIMD Corpus Christi	ACOR
AIMD Guam	AHSC	AIMD Iwakuni	AIWA
AIMD Kingsville	AKNG	AIMD Meridian	AMER
AIMD Misawa	AMIS	AIMD Pensacola	APEN
AIMD Signonella	ASIG	USS NIMITZ	CV68
USS DWIGHT D EISENHOWER	CV69	USS CARL VINSON	CV70
USS THEODORE ROOSEVELT	CV71	USS ABRAHAM LINCOLN	CV72
USS GEORGE WASHINGTON	CV73	USS JOHN C STENNIS	CV74
USS HARRY S TRUMAN	CV75	USS RONALD REAGAN	CV76
USS GEORGE H W BUSH	CV77	USS GERALD R FORD	CV78
USS JOHN F KENNEDY	CV79	USS ENTERPRISE	CV80
USS DORIS MILLER	CV81	USS TRIPOLI	LHA7
USS AMERICA	LHA6	USS WASP	LHD1
USS BOUGAINVILLE	LHA8	USS KEARSARGE	LHD3
USS ESSEX	LHD2	USS BATAAN	LHD5
USS BOXER	LHD4	USS IWO JIMA	LHD7
USS MAKIN ISLAND	LHD8		
Marine Corps Aviation			
MALS 11 Miramar	MA11	MALS12 Iwakuni	MA12
MALS 13 Yuma	MA13	MALS 14 Cherry Point	MA14
MALS 16 Miramar	MA16	MALS 24 Kaneohe Bay	MA24
MALS 26 New River	MA26	MALS 29 New River	MA29
MALS 31 Beaufort	MA31	MALS 36 Futenma	MA36
MALS 39 Pendleton	MA39	MALS 41 Fort Worth	MA41
MALS 49 Stewart ANGB	MA49	HMX-1 Quantico	MHMX

U.S. Air Force	
Davis-Monthan AFB	TRDMO

Appendix T

2M/MTR/FOTR Points of Contact

Point of Contact	Phone / Email / Web
2M/MTR/FOTR Program Manager	
Commander Naval Sea Systems Command SEA-09MM35 1333 Isaac Hull Avenue S.E. Washington DC 20376	DSN: 326-1491 COM: (202) 781-1491
2M and MTR Certification Agents	
Director (Code 2525) NAVUNSEAWARCEN DET FEO Norfolk St. Juliens Creek Annex Building 169, Magazine Road Portsmouth, VA 23702	DSN: 386-0800 COM: (757) 396-0800 EMAIL: 2mmtr_help@us.navy.mil EMAIL: 2MMTR_PartsHelp@us.navy.mil WEB https://https://intelshare.intelink.gov/sites/2m-mtr-database/layouts/15/start.aspx#/
FOTR Certification Agent	
Commander Dahlgren Division, Naval Surface Warfare Center Code A31 Bldg 1500 RM 110A 17214 Avenue B, Suite 126 Dahlgren, VA 22448-5147	COM: (540) 653-1610 EMAIL: DLGR_NSWC_FO_ENG@navy.mil WEB: https://www.navsea.navy.mil/Home/Warfare-Centers/NSWC-Dahlgren/What-We-Do/Navy-Shipboard-Fiberoptics/
Coast Guard 2M Liaison	
2M/MTR Program Manager NAVUNSEAWARCEN DET FEO St. Julian Creek Annex 169 Magazine Rd. Portsmouth VA 23702	COM: (757) 396-0800 x 5325 or 5251
2M/MTR/FOTR Fleet Coordinator (Atlantic)	
Southeast Regional Maintenance Center Naval Station Massey Street Code 212 Bldg 1488 Mayport, FL 32228	COM: (904) 270-5126 X3505 DSN: 960-5126 X3505 WEB: http://www.sermc.surfor.navy.mil/

Point of Contact	Phone / Email / Web
2M/MTR/FOTR Fleet Coordinator (Pacific)	
Commanding Officer Southwest Regional Maintenance Center ATTN: Code 205B / 2M/MTR/FOTR 3755 Brinser Street, Suite 1 San Diego, CA 92136-5299	DSN: 526-1346 COM: (619) 556-1346 EMAIL: SWRMC.2M.MTR@navy.mil
2M/MTR/FOTR Inspector Sites	
Commanding Officer Mid-Atlantic Regional Maintenance Center Code 212 9727 Avionics Loop, BLDG LF-18 Norfolk VA 23511-2124	DSN: 400-0716 COM: (757) 400-0716 EMAIL: MARMC_NRFK_2M_MTR_HELP@navy.mil
Officer In Charge FDRMC Detachment Rota ES ATTN: ISEMER 2M Shed PSC 819 Box 29 FPO AE 09645	COM: 011-34-956-82-2713 DSN: 314-727-2713 EMAIL: RMCDetRota.TechAssist@eu.navy.mil
Officer in Charge ATTN Code 210 2M Recert Lab PSNS & IMF Detachment Everett 2000 W. Marine View Drive Everett, WA 98207-0001	DSN: 727-5405 COM: (425) 304-5405
Pearl Harbor Naval Shipyard and IMF Fleet Technical Support Code 210 BLDG 1377 ATTN: 2M/MTR/FOTR Inspector, Code 210.2 680 Pearl Harbor Blvd Pearl Harbor, HI 96860	DSN: 315-473-0596 COM: (808) 473-0596 WEB: http://www.phnsy.navy.mil/
SRF JRMCA Yokosuka Department Head Code 290 2M/MTR/FOTR Inspector PSC 473 Box 8 FPO AP 96349-0001	DSN: 315-243-1982 COM: 011-8146-816-1982
U.S. Navy Training Sites	
Officer in Charge SCSTC Detachment Middle-Pacific 2M/MTR Office 1000 North Road STE 100 Pearl Harbor HI 96860-44610	DSN: 315-473-0480 COM: (808) 473-0480

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U.S. Navy Training Sites (continued)	
Commanding Officer SCSTC Detachment Southeast N3/2M 351 Baltimore Street Bldg 351 Naval Station Mayport, FL 32228-0147	DSN: 960-5260 / 5243 COM: (904) 270-5260/5243
Commanding Officer SCSTC Hampton Roads Learning Site Norfolk N752/2M 9550 Farragut Avenue Norfolk VA 23511-2790	DSN: 564-1667/1655 COM: (757) 445-1667/1655
Commanding Officer SCSTC Learning Site San Diego N752/2M 3975 Norman Scott Rd., Suite 1 San Diego CA 92136-5588	DSN: 526-8548 COM: (619) 556-8548
Officer in Charge CNATT Detachment Atsugi 2M Division PSC 477 Box 31 FPO AP 96306-2731	DSN: (315) 264-3159 COM: 011-81-3117-64-3159 WEB: https://www.netc.navy.mil/centers/cnatt/atsugi/
Commanding Officer CNATT Unit Whidbey Island Attn: 2M/MTR 3665 North Princeton Street Oak Harbor WA 98278-8000	DSN: 820-2733 COM: (360) 257-2733 WEB: www.netc.navy.mil/CNATTWhidbeyIsland/
NAVAIR Depot Training Sites	
Commanding Officer FRC East PSC Box 8021 Code 6.2.3.4 Marine Corps Air Station Cherry Point NC 28533-8021	DSN: 451-7415 COM: (252) 464-7415
Commanding Officer FRC Southeast Code 62429 Naval Air Station Jacksonville FL 32212-0016	DSN: 690-5797 COM: (904) 790-5797
Commanding Officer FRC Southwest Code 936 NAS North Island PO Box 357058 San Diego CA 92135-7058	DSN: 735-7950 COM: (619) 545-7950

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U.S. Coast Guard 2M/MTR Training Site	
Commanding Officer Attn: TEW – 2M/MTR 1 U.S. COAST GUARD TRAINING Yorktown VA 23690-5000	COM: (757) 856-2287
U.S. Air Force 2M Training Site	
372 TRS/DET 11 3295 South 5th Street Davis-Monthan AFB AZ 85707-3914	DSN: 228-5635 COM: (520) 228-5635 WEB: http://www.dm.af.mil/

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